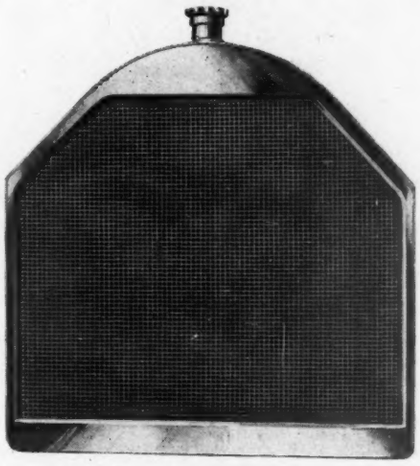
FOR SALE AT ALL NEWS STANDS TEN CENTS A COPY

MOTOR AGE

VOLUME XXII CHICAGO, SEPTEMBER 19, 1912 NUMBER 12

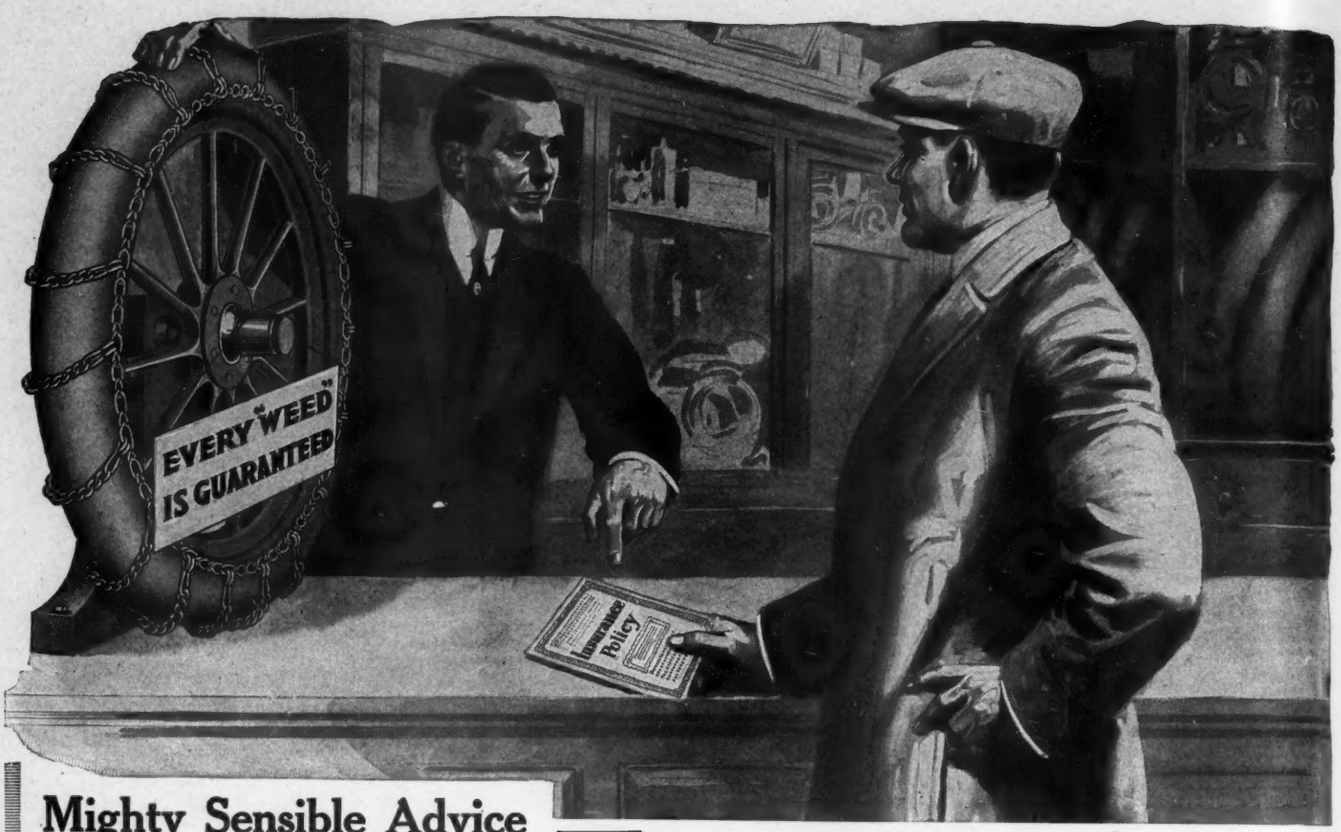


Write for our Illustrated
Book of Radiator Designs

McCord Radiators

are standard with the principal manufacturers of American pleasure and commercial cars.—A splendid testimonial to the theory involved in their design and to efficiency in their production and use.—Good "Reasons Why" the manufacturers and drivers of automobiles should insist on having the McCORD guarantee back of their radiators.

McCORD MANUFACTURING COMPANY
DETROIT, MICHIGAN
CANADIAN FACTORY — WALKERVILLE, ONTARIO



Mighty Sensible Advice

Car Owner (To Salesman)

"I've just had my car insured, as you can see, and I find in the policy a printed rider, which strongly advises me to equip my tires with Weed Chains. What about it?

Salesman

"It means that insurance companies have made a special investigation and they have found that nine-tenths of all automobile accidents are caused by skidding—that ***skidding accidents are practically eliminated*** by the use of tire chains, and if they could persuade all their policy holders to carry Weed Chains and put them on when the roads are wet and slippery, ***they would materially reduce their risk.*** Can you imagine a stronger endorsement? They have taken this action after a careful consideration of the evidence presented through the most crucial test upon all manner of city pavements and upon country roads—under all conditions. They have found that ***Weed Chains are an absolute safeguard.***"

Car Owner

"I am convinced now that my car should be equipped with Weed Chains: fix me up right away. ***If I had known how necessary Weed Chains really are, at the time my car was delivered I would have insisted that they be included as part of its standard equipment.***"

Salesman

"Now you're wise—let me tell you something: I have driven an automobile for years. At first I thought I could get along without tire chains, but now I would no more think of starting on a trip without them than without gasoline. I keep my car insured, of course, but I want ***safety insurance,*** besides—the kind that ***prevents*** accidents; that ***keeps me out of trouble*** and gives me more absolute confidence that ***my life is being safeguarded.*** That's why I always carry Weed Chains with me.

Don't stick them into the tool box and leave them there. That doesn't do any good. ***Put them on and use them*** when it starts to rain, or when the roads are slippery and uncertain."

WEED ANTI-SKID CHAINS

Real Life Insurance—the Kind That *Saves* Lives

Has your own experience or that of others taught you no lesson? Are you still taking your life in your hands by neglecting to take the necessary precaution against skidding? Are you still unwisely depending on rubber alone for the safety of yourself, the occupants of your car and other road users?

There is only one way to be sure of perfect control and safe, comfortable driving through deep mud, treacherous sand or on slippery pavements, and that is—equip all four wheels of your car with Weed Chains. On the rear wheels they insure traction and ***prevent skidding,*** on the front wheels they make steering easy and sure.

Weed Chains do not injure tires because they are free to creep. They are not anchored, but continually shift their position on the shoe with every revolution of the wheel. Manufacturers will not guarantee their tires unless the chains used on them are free to creep. Are put on in a jiffy without the use of a jack or other tools.

If you haven't a set of Weed Chains, or if you have a pair for the rear wheels only, get a full equipment now. Stop at your dealer's the next time you are out in your car and provide yourself with **the kind of life insurance that saves lives.**

Weed Chain Tire Grip Company, 28 Moore Street, New York City

MOTOR AGE

Published by the
CLASS JOURNAL COMPANY
910 South Michigan Avenue
CHICAGO ILLINOIS

Volume XXII SEPTEMBER 19, 1912 No. 12

Contents

MILWAUKEE'S DREAMS ALL COMING TRUE..... 5
Story of how the Badgers conceived idea of promoting big road races and how they made good

ALL SET FOR MILWAUKEE SPEED CARNIVAL..... 8
Failure to complete course in time causes postponement of grand prix to Monday, September 23—Meet to open Friday

DEVELOPMENTS IN UNITED MOTORS' CASE..... 10
Aftermath of failure of big holding concern which went into hands of receivers last week

THOMAS ONE OF THE UNITED MOTORS' UNITS..... 11
Mystery as to real ownership of Buffalo concern cleared up

EDITORIAL 12

ILLINOIS READY FOR GOOD ROADS RALLY..... 13
Peoria meeting will discuss how to spend money secured by registration of motor cars in state

ONLY TWO CARS PERFECT IN BUFFALO RUN..... 14
Maxwell and Warren-Detroit tie for chief honors in 4-day reliability promoted by the Bisons

MAKERS TAKE KINDLY TO CARL FISHER'S IDEA..... 16
Detroit expected to back up Hoosiers in good roads scheme

PEUGEOT MAKES GOOD ITS SPEED CLAIMS..... 17
Aftermath of Sarthe road races reflects glory on French concern

TO GIVE GLIDDENITES A ROYAL SEND-OFF..... 18
Detroit will entertain tourists before start—Details of route to New Orleans announced

CHICAGO DEALERS HOLD FALL FESTIVAL..... 19
Annual display of new cars opened with monster truck parade which calls out 700 machines

OBSERVATIONS ON MOTOR TRUCK TIRES..... 28
Paper on subject prepared by F. E. Whitney and read before the Philadelphia branch of Society of Automobile Engineers

GRAY AUTOMATIC CHANGE-GEAR CONTROL..... 33
Description of new device brought out by Illinois inventor

SIX-CYLINDER ADDED BY COLE COMPANY..... 34
Three chassis put out for 1913 by Indianapolis concern

DEPARTMENTS

Coming Motor Events..... 13
Routes and Touring Information Department 20
Readers' Clearing House..... 24
Motor Car Repair Shop..... 32
Motorists' Bookman..... 35
From the Four Winds..... 38
In Realm of Commercial Car... 40
Among Makers and Dealers.... 44
Current Motor Patents..... 46
Development Briefs..... 48
Brief Business Announcements. 50

MICHELIN

Quick Detachable Clincher

Just as superior to other tires as Michelin Red Inner Tubes are to other tubes.

Michelin Tire Co.
Milltown, N. J.

GRAY & DAVIS

Electric Lamps

Lighting Dynamo

Electric Starter

This equipment really completes the perfected automobile. Discriminating motorists—those who want substantial, efficient equipment—demand GRAY & DAVIS products.

ELECTRIC LAMPS

Your safety at night depends upon proper road illumination. Lamps that rattle, fall apart or give half light, are **not** the kind you are entitled to when you buy a car.

Some lamps are little more than a shell of brass and glass. Compare this grade with the substantial and highly efficient Gray & Davis Lamps, which are the result of 16 years' lamp-building experience and are constructed in a great factory equipped with the most modern machinery.

They are lamps of Quality. They produce the most brilliant light, are strong and sturdy, and enhance the value and appearance of any automobile.

LIGHTING DYNAMO

The most efficient electric system obtainable. The Gray & Davis Dynamo lights the lamps irrespective of the condition of the battery. It is the **only** system that will do this and the **only** auto-dynamo possessing the necessary Constant Speed feature which insures constant voltage.

This Dynamo is operated by the engine, lights lamps, charges batteries, provides current for power-horn, speedometer light and starting motor. It saves cost for recharging batteries and gas tank. All you do is turn a switch on the dash. A marvel of luxury and convenience. Built in the largest auto-dynamo factory in the world under the supervision of one of America's leading electrical engineers.

ELECTRIC STARTER (6 Volts)

A marvel of simplicity. No complicated controls—only a simple switch. The big feature is the 6-volt battery charged automatically by the Dynamo.

It starts a car under any condition and in zero weather. The Starter is a specially designed motor which rotates fly-wheel—positive in its operation. It will spin a six-cylinder car for one hour and a half—propel it two miles. Two minutes after car is started, current is replaced in battery.

If car is stalled on car tracks or in traffic, you press pedal and car is propelled **by the starter.** You don't have to change gears or touch throttles.

1913 Peerless Cars Carry

GRAY & DAVIS Electric Lamps, Lighting Dynamo, Electric Starter

---

Write for Complete Information

GRAY & DAVIS, Inc., 55 Lansdowne St., BOSTON, MASS.

Manufacturers of Automobile Lamps, Dynamos and Electric Starters

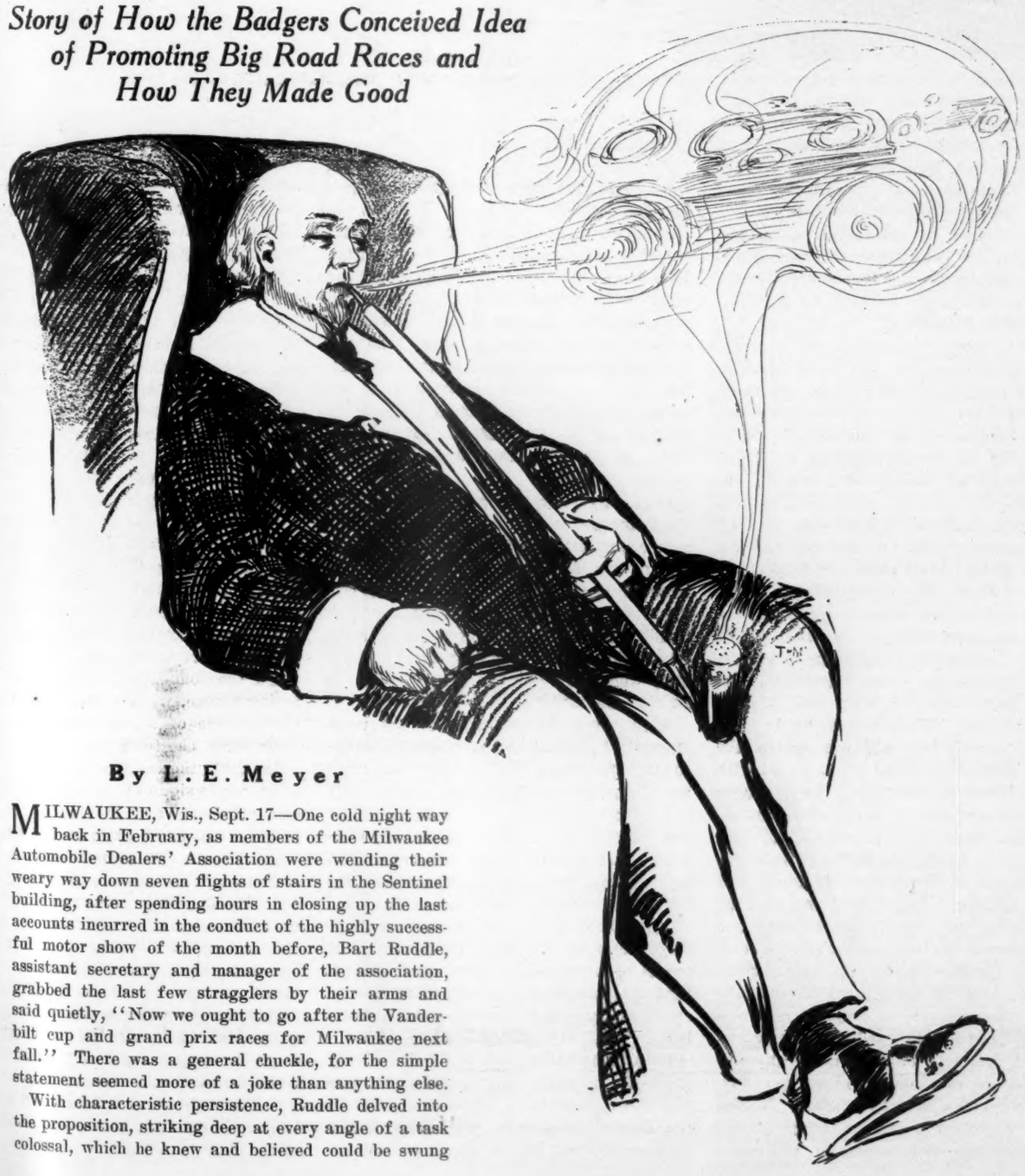
When Writing to Advertisers, Please Mention Motor Age.

VOL. XXII, No. 12 CHICAGO, SEPTEMBER 19, 1912 $3.00 PER YEAR

MOTOR AGE

Milwaukee's Dreams All Coming True

Story of How the Badgers Conceived Idea of Promoting Big Road Races and How They Made Good



By L. E. Meyer

MILWAUKEE, Wis., Sept. 17—One cold night way back in February, as members of the Milwaukee Automobile Dealers' Association were wending their weary way down seven flights of stairs in the Sentinel building, after spending hours in closing up the last accounts incurred in the conduct of the highly successful motor show of the month before, Bart Ruddle, assistant secretary and manager of the association, grabbed the last few stragglers by their arms and said quietly, "Now we ought to go after the Vanderbilt cup and grand prix races for Milwaukee next fall." There was a general chuckle, for the simple statement seemed more of a joke than anything else.

With characteristic persistence, Ruddle delved into the proposition, striking deep at every angle of a task colossal, which he knew and believed could be swung

"THE FINANCE COMMITTEE WAS WORKING NIGHT AND DAY TO RAISE THE $50,000 FUND"

if gone after in the proper manner. Within a month's time he had been at Savannah and New York on secret missions. Three days after the monthly meeting of the association in April, the public was astounded by the actual announcement that the Vanderbilt cup and grand prix would be run at Milwaukee in September.

Milwaukee Astonished

There is a great difference between saying "the races will be run" and doing it. No one realized it better than the members of the M. A. D. A. Milwaukee people simply laughed at the monumental nerve of a body of twenty-two men in trying to promote an undertaking which was regarded as possible of accomplishment only by the millionaire sportsmen of New York or Savannah, but Ruddle and his cohorts gritted their teeth and went at it.

Even while the Automobile Club of America, the Motor Cups Holding Co., the Savannah Automobile Club and others directly interested in the running of previous contests for the Vanderbilt and grand prix, were thinking over the request of the Milwaukeeans to be permitted to undertake the proposition, the racing committee of the M. A. D. A., with A. A. Jonas as chairman, and Manager Ruddle went out to scout for possible road race courses in the vicinity of Milwaukee. A dozen courses were laid out on the maps of Milwaukee, Waukesha and Racine counties. In the mud and slush of late spring the committeemen went out in their cars to visit town chairmen and resident farmers along the prospective courses. Most of them shook their heads sadly and said, "You fellows must be crazy." The rest listened courteously but declined firmly to be a party to any undertaking so obviously ridiculous. For there was then a well defined feeling against motorists in general because of the acts of a few who burned up the country roads in their travels for business or pleasure, mostly pleasure.

The outlook was gloomy, but just then word came from New York that the races had been awarded to the M. A. D. A. for 1912. The M. A. D. A.'s were jubilant and out they went again to look for a course. This time they found a friendly feeling right in Milwaukee county, in Greenfield township, the home of a number of wealthy retired farmers and capitalists who not only possessed a certain amount of sporting blood, but realized at once what immense value the international road racing proposition, if successfully carried out, would be to Milwaukee and Milwaukee county.

Fred Wagner was brought out from New York, ostensibly to look over prospective course, but actually to talk over the matter and say if he would throw his strength back of the thing. A big banquet was given in his honor and then he was bundled into a big car and taken over the Greenfield course. He inspected it minutely and said, "Fine."

Raising Guaranty Fund

Then came the command to put up a guaranty fund and give concrete assurance to the governing bodies that the races would not only be high class events, that it be properly policed, and a hundred and one other details. While the finance committee was working night and day to get subscriptions to a $50,000 fund, the racing board was working with the town board of Greenfield to get the consent of property-owners to run motor races over their public highways, lease their frontages, or that part needed for grandstands, bleechers, training camps, supply stations, scoreboards, etc.

Both committees were not quite wholly successful, and the M. A. D. A. members dug down into their jeans and financed the things themselves, while the matter of a course was left in abeyance because at just this stage of the game there was a sudden inspiration in the minds of the chairman and members of the town board of Wauwatosa, Milwaukee county that the proposed racing carnival was something they could not overlook.

Wauwatosa Makes Offer

Then came the offer of Joe Guenther, town chairman, of a course of suitable length and all the rights and privileges of acreage, frontage, public highway racing rights and everything else, for and in consideration of having built without cost to the town board, approximately 8 miles of the most modern highway in America. It was too good to be true, but another condition of the offer was that everything must be kept secret until the town board had obtained the signatures of every property-owner or resident tenant of farms lying along those parts of the public roads which would be included in the race course. The pledge of secrecy was given.

It was a most fortunate affair, coming at a most propitious time. Here was provided the foundation, at least, of a road racing course, without any cost excepting the expense of reconstructing the public highways. The town board put the proposition up to the farmers in this way: "We want you to sign over all the desired rights and privileges and in return you get 8 miles of the finest roads in the country." There were a few murmurings, of course, and demands for cash for giving up rights, but the majority was so overwhelming that the squealers were crushed down and out. A few have since got their little bit, but not for their consent—it was for actual damage done to their property by reason of the cutting away of land for improving turns, or the destruction of crops to make room for grandstands, bleachers, and other similar requirements. But this expense is a trifle, for by good fortune in selecting places for these structures, it was necessary to destroy only

eighteen rows of corn on the site of the judges' stand, press stand and executive offices, while the grandstands and pits are standing on a wide expanse of bare field, from which the last crop of hay was cut before the first plank was laid for the stands.

Pabst Supports the Meet

Even before a course had been definitely settled upon or the undertaking was well under way, the M. A. D. A. went to Colonel Gustav Pabst, the millionaire brewer of Milwaukee and asked him what he would do for the good of the cause. "What do you want?" asked the colonel in his customary liberal spirit when the good of Milwaukee is concerned. They told him they had picked him out as the man who would donate a loving cup to be the chief prize in a third competition to be run at the time of the Vanderbilt and grand prix, a trophy representative of Milwaukee as the Savannah challenge cup was of Savannah. Turning to his private secretary, the colonel wrote out an order to that effect—and this was the birth of the Pabst Blue Ribbon trophy.

Then the need of a fourth trophy, for the light cars, to round out a full program of events, was filled by the favorable response to a request directed to Charles H. John, president, and A. F. Milbrath, secretary and treasurer of the Wisconsin Motor Mfg Co., of Milwaukee. The Wisconsin Challenge trophy is the official title of this cup.

The only obstacle encountered by the M. A. D. A. through it all was the failure of the road construction contractors to complete the job in time. This caused the postponement on last Thursday night, September 12, of the grand prix competition from Tuesday, September 17, to Monday, September 23. It was a sad-faced gathering of promoters which finally admitted to itself that it was up against it on the course proposition and that postponement was inevitable. The contractor was fired on the spot and new brains put at the head and the course is ready on schedule time under the rearrangement of dates.

Good Location of Course

Although ½ mile of the course runs along the limits of the city of Milwaukee and occupies the frontage of a public park, the only legislative mill the M. A. D. A. was obliged to go through was the town board of Wauwatosa—and these estimable gentlemen signed the resolution giving the right to race on public highways the minute it was drawn up. In fact, the offer to give the dealers' association a course was, for all practical purposes, the necessary legislation to this end. The rest of it was easy—to furnish a bond of $50,000 to the township of Wauwatosa to cover all liability for damages from any source whatsoever.

A few obstinate farmers were encountered when the parking space plan was laid down. In getting the consent of

"MANY COURSES WERE CONSIDERED"

the property-holders for the use of their acreages for the purpose of the races, the association stipulated certain reservations of rights, principally that the owner may accommodate a liberal number of

THE COST OF IT ALL

relatives and friends on his road frontage, but all moneys accuring from the sale of parking space thereon go to the association.

The road construction will cost approximately $22,500. The association has hung up cash purses totalling $20,250. The other expense will figure up at least $15,000, a total expense of approximately $60,000.

This will be offset by the entry fees; sale of general admission at $1 each, sale of grandstand seats at from $1.50 to $1; bleachers, 50 cents; parking spaces from $40 down to $10 per car.

As compared with the system at Elgin, the M. A. D. A. is fortunate indeed in that it nets the entire gross receipts and is not required to split with the farmers owning property fronting on the roads used for the Milwaukee course. The farmers sold their consent simply "in recognition of the benefits which I will derive as a property owner or residing tenant on the particular road in the town of Wauwatosa from the valuable improvements which your association is proposing to make." The contract is as follows:

Contract With the Farmers

Town of Wauwatosa, Wisconsin, ..., 1912. Milwaukee Automobile Dealers' Association, Milwaukee, Wis. Gentlemen—In recognition of the benefits which I will derive as a (property owner) (residing tenant) on the ..... road in the town of Wauwatosa from the valuable improvements which your association is proposing to make upon the Fond du Lac avenue road, the town line road, South Fond du Lac avenue road and Burleigh street, in the town of Wauwatosa, for the purpose of putting the said roads in condition to run thereon the automobile races known as the grand prix, Vanderbilt cup, Pabst Blue Ribbon trophy and Wisconsin Motor trophy races next September, I hereby join with other property owners and residents in this town in a petition to the town board of the town of Wauwatosa to grant a permit to your association for the use of said highways, and in further evidence of my personal approval of the holding of said races upon the highways above indicated, I hereby agree to coöperate in every way with the race committee of your association and to assist your committee in protecting life and limb of spectators on the premises abutting on any of said highways belonging to me or under my control, and to conform in all respects to the rules of your said committee, and to cheerfully recognize and obey such regulations for the use of said course as may by your committee be made.

I further agree under no circumstances to permit any special buildings or structures, such as grandstands, bleacher stands, advertising display boards, or other buildings of any kind whatsoever for the accommodation of spectators of said races, or for the display of advertising, or the sale of intoxicating liquors, refreshments, or for any other purposes whatsoever, to be erected or placed upon any lands or premises owned or controlled by me and abutting on any portion of said course, without the written consent and approval of your racing committee.

I further agree to permit your committee to establish and maintain on any premises owned or controlled by me all necessary signal stations, telephone stations, scoreboards, camps, supply depots for the racing cars, and emergency hospitals, for the proper and safe conduct of said races, without charge, and to place telegraph and telephone poles temporarily inside the fence line on any of the said premises, and to remove any trees or shrubbery from any of said highways which grow or are so situated as to endanger the life or limb of the contestants in said races or interfere with the same; provided, however, that no such signal station, scoreboard, camp or poles shall be so situated as to unreasonably inconvenience the usual occupations carried on on my said property; and provided that the cost of the removal of any telegraph or telephone poles, trees, brush, etc., shall be paid for by your association; and on the further condition of your agreeing to remove any apparatus, tents, poles, boards, buildings and structures which may be placed upon my property within forty-eight hours following said races. This letter may be considered as constituting an agreement when accepted by you.

All Set for Milwaukee Speed Carnival

Failure to Complete Course in Time Causes Postponement of Grand Prix to Monday, September 23—Meet to Open With Small-Car Races, With Vanderbilt on Saturday—Good Fields to Compete in Each of Four Events

MILWAUKEE, Wis., Sept. 16—Milwaukee's big road racing carnival will open on Friday noon with the first running of the races for the Pabst Blue Ribbon trophy and the Wisconsin Challenge trophy, the big event scheduled as the curtain-raiser, the fourth contest for the grand prix of the Automobile Club of America having been changed to the wind-up, which will take place on Monday, September 23, following the Vanderbilt on Saturday, September 21. It would have been possible to run the grand prix as scheduled on Tuesday, September 17, but this would have meant that the cars and drivers would have taken the course without a minute's practice, for the roads were not completed until late Monday night. No driver but one bent on suicide could have considered such a thing.

The necessity of a change in the program so that the first events would be set back to give the Milwaukee Automobile Dealers' Association the better part of an additional week to get its course in shape was anticipated by the inner circle for some days in advance of Thursday, September 12, when Starter Fred J. Wagner arrived from New York to begin his work. Mr. Wagner took a run around the loop Thursday noon and at the finish shook his head and began to figure out a new scheme. Thursday evening the association was called together to hear a plain-spoken word by Wagner and at the conclusion of the meeting it was announced that the grand prix would be postponed from Tuesday until the following Monday, and the other events run as scheduled.

Forced to Change Date

The action temporarily staggered the promoters, but all realized the absolute necessity of the change, and then started out to make good. The road construction contractor and his assistants were fired on the spot and some new and fresh blood infused into the thing. Friday morning the dealers cast off their blue spectacles when they saw a half-dozen gangs of workmen driven at top speed by the new bosses, actually accomplishing something worth while. The course fairly grew while one looked and the fast work was carried on throughout the night by the light of torches and head-lights focused to the best advantage. Monday night the last drop of oil was on the roads and the final coating of sand was being applied. Starter Wagner announced that official practice would positively start at 11 o'clock Tuesday morning—which, by the way, is the hour at which the grand prix was to have been started on that day.

The new arrangement gives the light-car drivers 2 full days of practice; the Vanderbilt contestants 4 days, and the competitors in the grand prix 6 days in which to tune up their cars and make that close acquaintance with the roads which is so necessary to make the best speed possible.

Entry List Reopened

The change in the program carried over the closing of entries for the grand prix to Wednesday night. Twelve cars already have been nominated, and it is possible that two or three more will come in, as it is planned to give any entrant in the other three events a chance to be booked for the final race up to Sunday morning. A few of the Vanderbilters have held off because they desire to get through the Saturday race before taking a chance on the Monday race.

The Pabst and Wisconsin Challenge races show only a fair-sized entry list, but both will bring out classy fields. In the Pabst, for 231 to 300 cubic inch cars, there are three Mercers, one Mason, two Falcars and a Case. Judging from past performances, the caliber of the men behind the wheels should make this a most interesting race, for Hughes and Spencer Wishart will pit themselves against Mortimer Roberts, Hastings and Trussel, Ed Pullen of their own camp, and Joe Jagersberger, who intends to come back after being out of the speed game for nearly a year, and with one good leg, at that. The other limb he lost at Columbia, S. C., last November in a bad spill on a dirt track only a short time before the international races at Savannah. If the Flying Dutchman cannot stand the 220-mile gaff, Louis Disbrow or Joe Nikrent will help him out, with Bill Endicott as a third substitute in case of emergency.

The Wisconsin Challenge, a 173-mile contest for the little fellows of 161 to 300 cubic inches, will be a three-cornered fight involving the Ford, E-M-F and Mason. It is likely this event will be a duel between Frank Kulick and Harry Endicott, as the other three drivers, Cramer and Roy Snyder of the Mason team and John Heber of the E-M-F, are lesser lights. Heber is a Milwaukee man and will drive a Milwaukee-owned car, an E-M-F of the type used by Frank Witt in all of his races, the property of Dr. Irving M. Fowle of Milwaukee. The doctor bought the car only a few days ago and after looking high and low for a competent driver, he found Heber, who has done a lot of track work in Buicks, but is now on the road.

Lineup of the Vanderbilt

The line-up in the Vanderbilt will be similar to that in the Elgin trophy, although there will be seen at Milwaukee such stars as Teddy Tetzlaff, holder of the world's road racing record for average speed, and Louis Disbrow of the Case racing outfit. The list includes de Palma, Mulford, Hughes, Wishart, Merz, Anderson, Clark, Trussel and Hastings. In addition there is a newcomer in the big road racing game, Harry Nelson of Milwaukee, who will drive the big blue Lozier of Richard H. Knowles of Milwaukee, a wealthy sportsman who tore up a fine touring car

NORTH FOND DU LAC LEG OF MILWAUKEE COURSE AFTER OILING

to make a mount that would give the Cream City at least one representative in the races. Nelson has been in the racing game on a more or less local scale for 5 or 6 years, but looks as if he had the goods and may surprise the dopesters.

First Practice on Course

Milwaukee, Wis., Sept. 17—After an all-night rain and under skies still murky and threatening, the contestants in the four international road races were given the word to take the 7.882 mile course in the town of Wauwatosa at 11 o'clock this morning. No one excepting the indomitable de Palma attempted anything like record speed, as the roads were pretty well soaked up by the rainfalls of Saturday night and Monday night. There remained to be oiled on Saturday night a stretch of about ½ mile on the North Fondy road and the entire home stretch on Burleigh street, and the rain precluded all possibility of putting on the grease before the surface has dried out to a considerable extent.

The timer was not in working order until the practice hours were nearly over, and only a few of the cars were officially timed by the electrical device. In fact, the de Palma lap of 7:15 is the only real official time given out.

It was announced today that Joe Nikrent would pilot the Case entry in the Pabst instead of Joe Jagersberger. The Case officials fear that the Dutchman will not be able to stand the pace, as he has not competed in a race since losing his right leg at Columbia, S. C., a year ago, and is not in the best of physical condition.

Joe Horan will drive the third Benz in the grand prix instead of Joe Dawson, who it was thought would be reinstated by the A. A. A. contest board in time to compete at Milwaukee. The chances are so slim that he will be put in good standing that the Benz people nominated Horan.

Starter Wagner announced to the drivers today that hereafter they would be given double time for practice. The scheduled hours were from 11 to 1 o'clock daily, one hour being given the little fellows and another hour to the grand prix and Vanderbilt cars. Beginning Wednesday, the practice time will start at 11 o'clock and end at 3 o'clock.

Milwaukee Race Entries

VANDERBILT CUP
298.5 miles, or 38 laps

No.	Car	Driver	Bore	Stroke
21	Mercer	Pullen	4.39	5
22	Mercedes	De Palma	5.2	7.07
23	Mercer	Hughes	4⅝	5
24	Knox six	Mulford	4¾	5½
25	Lozier six	Nelson	4⅝	5½
26	Mercer	Wishart	4.39	5
27	Stutz	Anderson	4¾	5½
28	Mercedes	Clark	5⅛	7⅛
29	Fiat 70	Tetzlaff	5¼	7½

PABST BLUE RIBBON TROPHY
220.6 miles, or 28 laps

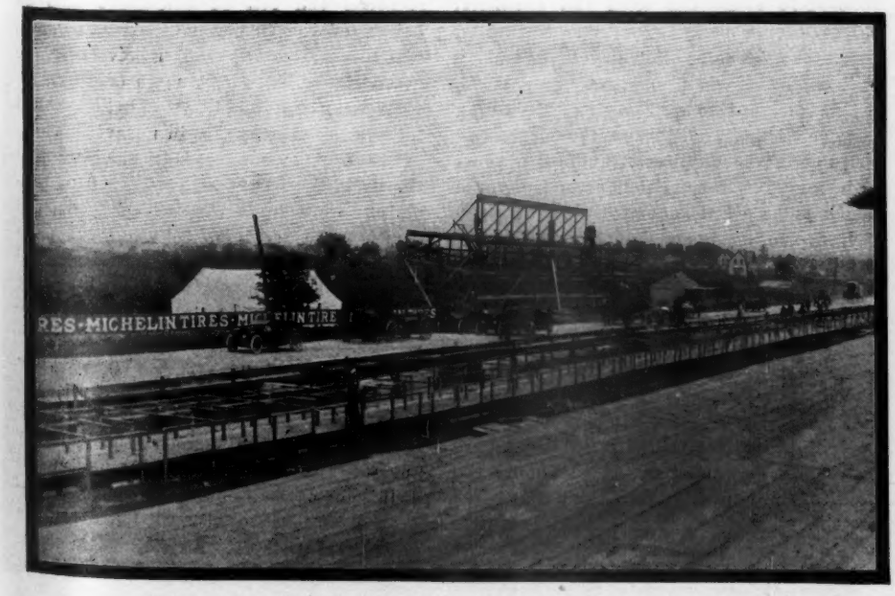
11	Case	Nikrent	4⅝	5
12	Bergdoll	Rooney	..	..
14	Mercer	Wishart	4.39	5
15	Falcar	not named	4⅛	5¼
16	Mason	M. Roberts	3⅞	5
17	Mercer	Pullen	4⅝	5
18	Falcar	Not named	4⅛	5¼
19	Mercer	Hughes	4⅝	5

GRAND PRIX
409.86 miles or 52 laps

31	Benz	Burman	..	..
32	Lozier	Neison	4⅝	5½
33	Fiat	Tetzlaff	5¼	7½
34	Mercer	Hughes	4⅝	5
35	Mercedes	De Palma	5.2	7.06
36	Mercedes	Wishart	5.2	7.06
37	Fiat	Bruce-Brown	5.9	7.87
38	Knox six	Mulford	4¾	5½
39	Mercedes	Clark	5.2	7.06
40	Benz	Bergdoll	6.2	6.3
41	Fiat	Bragg	5¼	7½
42	Benz	Horan	..	..

WISCONSIN CHALLENGE TROPHY
173.4 miles, or 22 laps

1	Ford	Kulick	3¾	4
2	Mason	R. Snyder	3⅞	5
3	Mason	G. Mason	3⅞	5
4	E. M. F.	J. Heber	4	4½
5	Mason	H. Endicott	3 13-16	5



VIEW FROM GRAND STAND ON THE MILWAUKEE COURSE

GETTING READY FOR DESERT RACE

Phoenix, Ariz., Sept. 16—Two cars, a Cadillac and a National, already are entered in the fifth Los Angeles-Phœnix road race, which is to start from the Hollenbeck hotel, Los Angeles, at 12 o'clock on the night of October 26. It is expected that fifteen or sixteen will take part this year. Reports are in circulation that a Simplex, a Fiat, an Isotta-Fraschini and several other high-powered machines will engage in the long desert struggle.

SPEED SHOWN IN OSTEND MEET

Ostend, Sept. 6—Christiaens, driving the 4.3 by 6.2 inch six-cylinder grand prix racer made the fastest time at the annual Ostend meeting. His average time for the flying kilometer run in two directions was 22 seconds, being at the rate of 101.8 miles an hour. The faster of the two runs was made in 20 seconds, being equal to 111.8 miles an hour. In the 20 kilometers race, Christiaens' time was 9 minutes 25⅖ seconds, being equal to a pace of about 78 miles an hour.

The second best time on the 20 kilometers—12.4 miles-course was put up by the amateur driver, Lacon, in a Gregoire of 3.1 by 6.2 inches bore and stroke, time, 11:26⅕. He was followed by Hautvast in a Sava in 12:05⅕, and by a Hispano-Suiza in 12:14⅖. After the big Excelsior Lacon's Gregoire was the fastest on the flying kilometer, its average for the two runs being :31; Berger on Sava occupied :35⅕, and Hautvast in same make :37⅕. Lacon's Gregoire covered the kilometer with a standing start in :45⅘ on the outward run and :45⅖ on the return trip. This year's meeting brought out fewer competitors than on previous occasions.

NEW 12-HOUR CLASS RECORD

London, Sept. 7—On Brooklands track a 15.9-horsepower Star, with a 3.14-inch bore and 5.9-inch stroke, covered 801 miles 1,513 yards in 12 hours, which is a record for its class. During the trial the car made three stops, totaling 5 minutes 27 seconds, for gasoline and oil. The front tires went through without change, while the rears were changed once as a precautionary measure. Following the speed trial, the car, carrying a 1,000-pound load, climbed the test hill at Brooklands from a standing start, the hill having a gradient of 1 in 4.

PEUGEOTS AND SUNBEAMS ENTER

Paris, Sept. 6—Six cars are at present entered for the French grand prix race to be held about the end of June, 1913. The firms are the Peugeot company with three cars and the Sunbeam Motor Car Co., of Wolverhampton, also with three models. Entries for this race close on the last day of October, when a minimum of forty cars must have been enrolled for the event to be held.

OLDFIELD TURNS FAST MILE

Cleveland, O., Sept. 14—Racing on the dirt track at North Randall today, Barney Oldfield in the Christie came within a hair of beating Bob Burman's Brighton Beach mile record of :47.85. In his first trial Oldfield cut the local track mark from :53⅖ to :49.93. Then Disbrow cut this to :49.35. Following this Oldfield made the circuit in :47.91.

Developments in United Motors' Case

Two Courses Open to Company—First One Is Reorganization, Taking Care of Creditors and Keeping Enough Capital With Which to Work—Other Is Sale of Plants

NEW YORK, Sept. 17—The situation of the United States Motor Co., which was put into the receivers' hands last Wednesday, so far as reorganization is concerned is developing slowly. There are two classes of creditors and each class is susceptible to division into several subordinate headings. The real question of reorganization undoubtedly will turn on the agreement or disagreement of the creditors as to participation. Summarized, the liabilities of the company may be divided as follows: Due to banks, $4,200,000; due to merchants, $2,000,000; due on debentures, $6,000,000; total, $12,200,000.

The total indebtedness is divided into two classes, the first of which is represented by commercial paper bearing two endorsements. The other class has paper with only one endorsement. As an instance, it may be cited that the debentures bear only the signature of the parent company. Another example of the one-signature paper is where one of the constituent companies of United States Motor Co. issued a note to secure payment for money advanced or goods purchased for its use.

The two-signature paper consists of notes issued by the parent company and endorsed by one of the constituent units, or that issued by the constituent company and endorsed by the parent organization. Practically all of the claims of the merchandise creditors are more or less of the one-signature paper.

In case agreement among the interested parties cannot be reached as to the status of the different grades of paper, the matter undoubtedly will come within the view of the court for definite construction of the claims of each side. At present the single major question that must be settled is with regard to agreement among the creditors themselves.

Two Courses Are Open

Under the receivership action there are two courses open to the company. The first is reorganization under some plan that will take care of the creditors and allow the company sufficient working capital to manufacture and sell its product. The other is a sale under order of the court.

Regarding the first course it may be said that the company requires about $5,000,000 additional capital with which to satisfy the claims and to furnish working capital. This may be raised in two ways, the one by assessment of the present stock and the other by the sale of additional securities either to the present creditors in payment of their claims or on the open market. In the latter case the proceeds could be used to take up the paper.

Committee Working on Plans

The committee which is formulating plans for reorganization has not finished its draughting of the proposed plan. Anything that has been said so far about the amount of the assessment or the method proposed for levying it, is branded as premature by the committee. Nevertheless, the report has been circulated throughout the industry and in the financial district that the favored plan is for an assessment of from $20 to $25.

According to recent statements coming from the United States Motor Co. and the brokers who have made a specialty of handling its stock issues in the market, fully half of the stock of the company is alleged to be held by the following list of stockholders: Anthony N. Brady, James C. Brady, J. S. Bache, Caroline W. Astor, Benjamin Briscoe, Samuel P. Colt, Frank Briscoe, H. Holbrook Curtis, Eugene Meyers, Jr., Thomas F. Ryan, Herbert L. Satterlee, Harry Payne Whitney, Richard Irvin, John Jacob Astor's estate and Charles G. Stoddard.

If the holdings of this group represent half the outstanding stock, they would be required to put up $2,300,000 on a basis of $20 a share. The complete amount that could be raised would be about $4,600,000. If the rate of assessment was $25 a share the total proceeds would be $5,750,000. The latter amount would be sufficient, in the opinion of those most intimately connected with the company, to place it on a sound footing. Naturally, there may be some difficulty in executing such a plan as was prematurely announced.

The alternative proposition of issuing new securities for sale on the market or in payment of creditors, involves a court adjustment as a condition precedent, or a continuance of the company as at present, depending upon the terms of agreement.

The holders of the two-signature paper feel they have some claim to seniority, but that claim is sharply at issue with the position taken by the holders of the one-signature paper. They insist that if there is to be another stock issue that a certain proportion of cash shall be paid to them. The smaller faction among the creditors are unwilling to take that view of the situation unless the same terms apply to them as well.

If no agreement is reached before the court sale, there are still several plans that may be followed to reach a reorganization. The assets may be bid in by a purchaser at auction; composition of the debts might be accomplished on a variety of bases, or in the last analysis the individual assets of the company might be disposed of on the block. Nobody in the trade looks for the dissolution of the company piecemeal as the result of the present action.

Some form of reorganization is the only result that is seriously considered, but what it will be depends on a multitude of factors.

W. F. S. Strong and Roberts Walker, who were named receivers for the United States Motor Co., also have been named as ancillary receivers in each of the states where the company operated manufacturing plants. There are about forty selling companies, located in various cities and states, all of which belong to the parent company by stock ownership or otherwise, and the question of ancillary receivership in all those states is being considered at present.

Providence Engine Co. Involved

The Providence Engine Co., manufacturer of steam engines and motor car parts—specifically running gears, crankshafts and machined parts—has been petitioned in involuntary bankruptcy on behalf of local creditors at Providence. The company is owned through its stock issues by the United States Motor Co. The preliminary hearing of the matter is set for Wednesday in the United States district court at Providence, and if the matter takes its usual course, Messrs. Strong and Walker will be named as receivers.

As an individual corporation, the Providence company is said to be in excellent financial shape.

At the time Judge Charles M. Hough received the bill of complaint filed on behalf of the Brown & Sharpe Mfg. Co., which resulted in the receivership, he noted the fact that the main questions involved in the bankruptcy action would require the utmost care in unraveling.

The court commented on the fact that the problems presented in the bill of complaint were exceedingly complex, and charged the receivers to use great pains in reaching the exact facts. Hence, all the official statements made to the public have been couched in what might be termed glittering generalities.

No schedules of assets and liabilities have been filed so far, but work is being done on their preparation. The banking debts of the embarrassed company amount to about $4,200,000, and, as is well-known, the Central Trust Co. figures as the heaviest creditor. But the mere fact that it heads the list with claims of about $1,400,000 does not mean that it stands to lose that amount, because each

Thomas One of the United Motors' Units

Mystery as to Real Ownership of Concern Cleared Up by Statement Big Holding Company Secretly Acquired Nearly All Stock in Buffalo Plant—No Reorganization Plans

NEW YORK, Sept. 17—The relations of the United States Motor Co. with the E. R. Thomas Motor Co. of Buffalo have been shrouded in more or less mystery for over a year. The facts in the case are that the United States Motor Co. acquired practically the whole of the Thomas stock about a year ago, exchanging its own securities for the certificates of the Buffalo company and furnishing some other consideration. The ownership of the Thomas company was kept a sort of state secret and officially it was denied repeatedly by officers of the United States Motor Co. during the past year.

The Thomas company went into the hands of a receiver last month after F. R. Humpage, president at that time, failed to exercise an option to purchase the company from the United States Motor Co. The reason for the failure of Mr. Humpage to take over the Thomas was that he was unable to float his new securities in the condition of the money market or could not obtain the services of an underwriting house to handle the transaction.

The capitalization of the Thomas company is $2,400,000, of which $400,000 is 7 per cent cumulative preferred. The remainder is common. There is no bonded debt. It is understood that Mr. Humpage succeeded in getting all the support required except $400,000.

As the Thomas company is now in bankruptcy court, the matter of considering it as in any way affecting the affairs of the United States Motor Co. has not been pressed.

E. R. Thomas, founder of the company, is a creditor to a material amount. Summed up in a few words, the United States Motor Co. affairs appear about as follows: No plan of reorganization has been formulated and adopted so far. Until such plan is agreed upon, there will be nothing to present to any underwriter. The terms of the agreement will be arranged as quickly as possible, as all the factors in the problem read so that if anything is to be done it must be done without undue loss of time.

NYBERG MAY MOVE PLANT

Indianapolis, Ind., Sept. 16—Henry Nyberg, president of the Nyberg Motor Works, Anderson, has confirmed a report that the company is negotiating for a factory site in this city, with a view to moving its manufacturing plant to Indianapolis. The company manufactures the Nyberg line of pleasure and commercial cars.

Since locating in Anderson some time ago, the company has found the need for expansion, not possible in its present location. For several days negotiations have been under way for a site here. It is understood several prospective sites have been visited and are under consideration. It is thought the company may locate in Speedway, the horseless city.

MARQUETTE CAR DISCONTINUED

Detroit, Mich., Sept. 17—The manufacture of Marquette motor cars has been discontinued, the factory of the Marquette company at Saginaw, Mich., which is a subsidiary to the General Motors Co., having been closed down. As yet no disposition of the machinery and stock at Saginaw has been made, and it has not been definitely decided just what will be done with it. The factory, however, will make up spare parts enough for 5 years ahead, so owners of Marquettes will not be hampered in getting replacements.

The Marquette interests are to be merged with those of the Olds Motor Works at Lansing, and as most of the Marquette cars which were on hand have been sold, there will be no trouble in making the change.

OAKLAND ENTERTAINS AGENTS

Detroit, Mich., Sept. 17—The Oakland Motor Car Co. entertained 125 branch managers, distributors and representatives at the factory last week. A banquet was tendered the visitors on Saturday evening at the Pontchartrain, while in the afternoon the factory was inspected and plans for the coming season were discussed.

OAKLAND FACTORY MANAGER KILLED

Detroit, Mich., Sept. 16—T. W. Wilson, factory manager of the Oakland Motor Car Co., was killed early Sunday morning on the White Lake road 2 miles west of Pontiac, Mich., when the car which he was driving turned turtle, pinning him underneath and suffocating him from the gasoline fumes. Mr. Wilson, who was accompanied by his brother-in-law, who was seriously injured, and his nephew, who was unhurt, was returning to his cottage at Watkins Lake after the banquet which the Oakland company tendered its visiting dealers and agents at the Pontchartrain hotel in Detroit.

TREGO GOES WITH PACKARD

Buffalo, N. Y., Sept. 16—Frank H. Trego, who resigned on September 1, as chief engineer of the E. R. Thomas Motor Car Co., has accepted the position of manager of the research engineering department of the Packard Motor Car Co., Detroit.

of the aggregate amounts owing to the various creditors may represent a large proportion of paper bearing two signatures, worth approximately its face value. Thus the lists of creditors that have been published fail to tell the real story because they do not show the equities applying to any case.

In the specific case of the Central Trust Co., the proportion of two-signature paper involved is very high, and the same might be said for other banking creditors who required the endorsement of one of the solvent constituent companies on the paper of the parent company, or vice versa, before entertaining it as a discount proposition.

Plants Continue Operations

The largest merchandise creditors also adopted this precaution to a considerable extent, and while the concerns that head the list appear to be involved for material sums, the actual fact is that they are protected almost as well as the bankers.

Except the Brush Runabout Co., all the manufacturing plants of the United States Motor Co. continue in operation to about the extent that they have for the past 90 days. The receivers obtained an order of court to advance money for the payrolls of the various plants from the general funds of the company and to make provision for administration.

There is little activity, however, in any of the plants, and there has been much less since the last of the 1912 product was completed and marketed.

In last week's issue a citation from the report made by Percy Martin on the various companies stated that, in Mr. Martin's opinion, the greatest necessity prevailed for active operation of the plants, so that their organizations might be retained and preserved. Now it is stated by those most closely allied with the project of reorganization that the arrangements will have to be made with the utmost speed in order to protect all the interests.

TWO CONCERNS CHANGE NAME

Detroit, Mich., Sept. 18—In the ever-changing motor car industry two changes of name were recorded last week. The Everitt Motor Car Co., of Detroit, maker of the Everitt cars, was made the Flanders Motor Co., and henceforth the product of the factory will be known as Flanders cars. It was only about 3 months ago that the name of Everitt was given to the concern, which originally was known as the Metzger Motor Car Co.

A consistent change also is reported from Jackson, in that the Clarke-Carter Automobile Co. has announced that henceforth it will be known as the Cutting Motor Car Co. It will continue to make cars under the trade name of Cutting.

MOTOR AGE
Published Weekly by
THE CLASS JOURNAL COMPANY
910 South Michigan Avenue CHICAGO
NEW YORK OFFICE
239 West 39th Street
SUBSCRIPTION RATES
United States and Mexico
$3.00 per Year
Other Countries including
Canada $5.00
Entered as Second-Class Matter September 19, 1899, at the Postoffice at Chicago, Illinois, under Act of March 3, 1879

Tribulationes de Minutiis

THE little things left undone frequently give more troubles than the big things done. The beginner with his car does not worry over lack of balance in the crankshaft; over too-heavy pistons and reciprocating masses; over mis-alignment of camshaft or crankshaft bearings; over valve timing; but he has his troubles with such little things as grease cups that cannot be turned up without disfiguring the fingers; fan belts that are too slack and cause some heating troubles or a perceptible loss of power; electric bulbs for speedometers that go out of commission the first or second week they are in use; fasteners on door pockets that will not stay fastened; top slips that will not slip on without the aid of a few hired men; steering gears that are sent out poorly adjusted, requiring the purchasers to make several trips to the dealers before they are working satisfactorily; tool boxes in which the tools are dumped into in promiscuous fashion without any regard to classification or frequency of use; tires which are grossly under-inflated so that the buyer has good opportunity of ruining them before he is aware of the fact that they are not inflated to the proper pressure; and one score of other tribulationes de minutiis, the little troubles, parts the buyer expects are in first-class order when the car is delivered but which he finds a month later were not in 100 per cent order when purchased.

THESE little things are the ones that cause the repair bills to mount up during the first few months in the owner's hand. These are the troubles that the factory engineer would not lower his dignity to discuss or write a letter of information on to the worried owner; his time is over-occupied on splined gearset shafts, grinding transmission gears, selecting self-starters and a few of the other big engineering problems which every man, who purchases a car, has a right to feel are properly designed and manufactured. Yet these are the things that the owner has a right to better attention on than he is receiving from many dealers now.

THE trouble is not all with the dealer, the white man's burden goes back to the final testing department at the factory, where, with the customary American rush, the car equipment is marshalled into place with the speed of a military maneuvre. Everything looks well when the car is wheeled to the freight or express car door, but the factory superintendent so often forgets that while the stripped chassis was given its road ordeal still the equipped car was never on the road, and there was not any assurance that the lamps would not loosen up the first week, that the electric horn would not fall off, that a grease cup or two would not be missing before a fortnight of service was ended, or that all grease cups had been properly filled or the requisite lubricant added to the gearbox, the motor timing gearcase or the differential housing.

MORE chronic car troubles are developed during the first 6 months of the car use than in any other similar after period or if these troubles have not exhibited themselves during the first 6 weeks, the basis of after troubles have occurred during such period, and undoubtedly have passed unnoticed by the amateur owner. The car maker and the car dealer can do much to relieve the present situation. True they have done much by issuing comprehensive instruction books, by delivering with the car charts on lubrication, etc., but these are often misinterpreted by hosts of new owners. With the amateur owner everything is new and strange, and the owner, if he drives himself, is specially interested in piloting the machine and keeping himself and it free from destruction. It is during this strenuous early period that more or less damage is often done by unconscious neglect. Although the lubrication chart states that the grease cup on the steering gear should be given a turn every 100 miles he forgets it for a week at a time; he forgets a score or more of other details. It would be money in pocket to dealer, owner and factory if the owner were required to report with his car to the dealer at the end of each 100 miles up to 500 miles, and if the dealer sent a demonstrator, or other qualified person, in the car for a 15-minute trip with the owner driving.

AT first glance the factory might expect that this attention would reduce the earnings of the service department, as a matter of fact it would be one of the greatest assets to such a department. Traveling repairmen, who after years of going from one part of the country to another inspecting the cars in the hands of owners, have almost invariably agreed that the big troubles could have been eliminated if detected early, and that often an owner is obliged to spend several hundred dollars in replacement or repairs of important motor and transmission parts, which bills would not have amounted to more than a few cents or dollars at the outside if taken early. Such attention as outlined here with would greatly help the reputation of any car, particularly the low and medium-priced machines, which do not get as minute attention in the final stages of equipment and body assembly as the higher-priced machines do.

The United States Motors Receivership

LAST week's receivership of the United States Motors, a holding organization controlling factories in half a score of cities throughout the eastern and central states, suggests the paramount importance of the executive management and the organization of such a gigantic corporation. Bringing together into such a holding concern factories previously operating under varied manufacturing plans and endeavoring to more or less harmonize the systems in all is a herculean task. Concentrating the engineering departments of all such factories in one center is an equally arduous task, because generally the engineering department cannot get too close to the production end, and the daily or hourly visit of the chief engineer through the various factory departments often saves weeks in the marketing of a new product and thousands of dollars by eliminating the cause of what later might be rejected materials or parts. With the enormous demand for cars of the last 2 years this organization apparently had not to trouble over a market, but the interior economy of the varied factories undoubtedly proved a stumbling block. In this commercial age the strength of a concern is generally the strength of its executive and financial departments. With design, production and sales departments adequate frequently the best ventures become derelicts, due to lack of executive ability in financing and interior economy on the part of those persons most directly interested in the proposition.

Illinois Ready for Good Roads Rally

BLOOMINGTON, Ill., Sept. 17.—Eugene D. Funk, of Bloomington, will lead a large delegation from this city and vicinity to the first annual convention of the Illinois Highway Improvement Association which opens at Peoria on Friday, September 27. The gathering will discuss the proper course of action in inducing the state legislature to favor the construction of a series of state highways or trunk lines of hard roads, using the money which has accumulated from the sale of motor car licenses. Strong pressure will be brought upon the general assembly to divide this money among the counties of the state, giving each township the pitiful sum of $300. As there as 1,600 townships in the state, the equable distribution of the fund would give each an insignificant allotment, absolutely useless for the purpose intended. The association has been advised, however, that the rural sentiment is strongly in favor of such an absurd distribution and it will require hard work to educate the legislature and the public generally concerning the views of the trunk line promoters.

The leading spirits in the improvement association also realize that the rivalry between the various sections of the state in securing these proposed state roads, may lead to ill feeling and jealousy. As it is impossible to construct all of these trunk lines at the same time, each section naturally is anxious to be the first to receive attention. Those unsuccessful may seriously menace the plans affecting the other locations and it is important to secure harmony and co-operation.

The plan now proposed and which will probably meet with favor, provides for a drawing. After the engineers make a report upon the most desirable routes between Chicago and St. Louis; between Freeport and Cairo; between Danville and Quincy, and other cross states lines thought feasible, it is proposed that the five or six roads be selected by lot, the one drawn first to be given attention first, and the others started after the first has been finished. This would be fair to all and would probably have the effect of dissipating any sectional rivalry or feeling.

The association will recommend that when the first road to be built has been selected, that the legislature appropriate all of the money in the license fund for the construction of this particular road, and appropriate an equal sum from the state treasury to apply upon the same improvement. When the first trunk line is completed, it is proposed to draw by lot for the second, and when chosen, repeat the performance. It may require 10 to 15 years to complete the chain of state roads but when finished, they will be of a quality to reflect credit upon the commonwealth.

Peoria Meeting Will Discuss How to Spend Registration Money

The convention of next week in Peoria will afford the means for such public expression. Representative men and women will discuss the subject from all standpoints.

TO SUBSIDIZE GUATEMALA ROADS

Guatemala City, Sept. 13—Action on the part of the federal government offering generous subsidies to any of the state or district authorities for the construction of roads will have a decided effect on motor imports. No roads to be subsidized are to be built until the plans are approved by government engineers and no plan will be approved unless the roadway is to be constructed sufficiently well to permit the use of motor cars. The successful use of motor cars in several sections of the republic has proven that great stimulus can be given many industries by the extension of such lines. This is especially true in the coffee districts where this method of haulage has proven most efficient. There are many isolated sections of the country not producing sufficient tonnage to justify the building of railroads but as the cost of ordinary roadways is so much less and they can be kept up with little expense the districts can be developed by the use of motor trucks.

September 14-21—Annual fall show; Chicago Automobile Trade Association.
*September 20—Wisconsin challenge and Pabst Trophy races; Milwaukee, Wis.
*September 21—Vanderbilt road race; Milwaukee, Wis.
September 23—Grand Prix; Milwaukee, Wis.
September 17-20—Fire engineers' convention; International Association Fire Engineers, Denver, Colo.
September 25-October 6—Agricultural Exhibition and Plowing Matches, Bourges.
September 30-October 5—American Road Congress; Atlantic City.
September—Track meet; Universal Exposition Co., St. Louis, Mo.
October 4-5—Track meet; Sioux City Auto Club, Sioux City, Iowa.
October 5—Fifth annual run of St. Louis Automobile Club; St. Louis, Mo.
October 6—Gaillon hill climb.
*October 7—National tour Detroit to New Orleans; American Automobile Association.
October 8—National convention of Electric Vehicle Association of America; Boston Mass.
October 12—Track meet; Rockingham park, Salem, N. H.
October 21—Chicago Motor Club reliability.
October 26—Los Angeles to Phoenix Road Race.
November 2-3—Splash guard competition; Versailles.
November 6—Track meet; Shreveport Automobile Club, Shreveport, La.

*Sanctioned by A. A. A.

SHOWS.

September 23-Oct. 3—Rubber show, Grand Central palace, New York.
September 26-Oct. 6—Exposition agricultural motor cars, Bourges, France.
October 2-12—Fire show, Madison Square Garden, New York.
October 7-12—St. Louis show.
November 8-16—Olympic show; overflow November 22-30 Agricultural Hall.
December 7-22—Paris salon.
January 6-11, 1913—Cleveland show.
January 4-11—Montreal show.
January 11-18—New York pleasure car show; Automobile Board of Trade; Madison Square Garden and Grand Central Palace.
January 11-22—Brussels, Belgium, show, Centenary Palace.
January 20-25—New York truck show; Automobile Board of Trade; Grand Central Palace and Madison Square Garden.
January 20-25—Philadelphia show.
January 25-February 1—Montreal, Canada, show.
January 27-February 1—Detroit show.
February 1-8—Chicago show.
February 10-15—Chicago Truck show.
February 10-15—Minneapolis show.
February 17-22—Kansas City show.
February 24-March 1—Show at Omaha, Neb.
March 3-8—Pittsburgh show.
March 8-15—Boston pleasure car show.
March 17-22—Buffalo show.
March 19-29—Boston truck show.
March 24-29—Indianapolis show.

RECOMMENDATIONS FOR CHICAGO

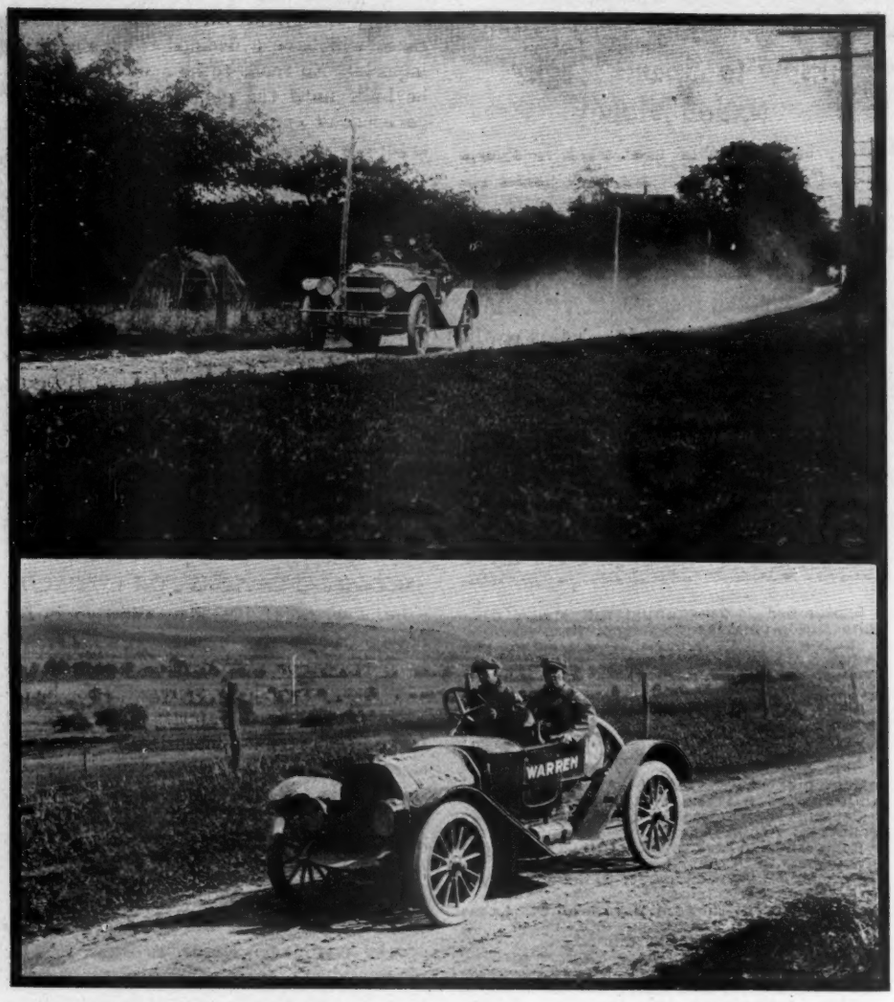
Chicago, Sept. 16—That Chicago is far behind the times in the matter of fire-fighting equipment for a city of its size is admitted, particularly as regards the method of propelling the apparatus. The need for a more extended motorization of equipment is emphasized by the recommendations of the National Board of Fire Underwriters, embodied in the recent report o fthe committees on fire prevention of that body.

This report is the result of a thorough investigation of the fire-fighting facilities of the city from March to June of this year, and the suggestions for the betterment of the service are quite comprehensive. Among those upon which most stress is laid are the recommendations for more extensive use of motor equipment to replace the horse-drawn apparatus in the city of Chicago.

The report of the National Board of Fire Underwriters urges that the chemical service be improved by the installation of additional motor-driven combination hose wagons or ladder trucks, so that two pieces of apparatus carrying large chemical tanks will be included in the first alarm assignments, and the use of separate horse-drawn chemical engines be discontinued; the motorized combination hose wagons to have divided bodies, with a capacity of at least 1,000 feet of hose, the speed of 30 miles per hour.

It is further urged that when the proposed high-pressure systems are installed, at least two-thirds of the engine companies in and close to the districts covered by such systems be equipped with motor-driven hose wagons carrying 2,000 feet of hose and a turret pipe; specifications for motor-driven fire engines to require pumps to deliver 700 gallons per minute at 120 pounds' net water pressure. The report is interesting.

Only Two Cars Perfect in Buffalo Run



MAXWELL WHICH FINISHED BUFFALO RELIABILITY WITH PERFECT SCORE
WARREN-DETROIT THAT TIED MAXWELL IN BUFFALO RUN

BUFFALO, N. Y., Sept. 16—In the third annual 800-mile reliability tour of the Automobile Club of Buffalo which finished Saturday night at 6 o'clock, two cars completed the 4 days' grind with clean scores, the Warren-Detroit car entered by the Poppenberg Motor Car Co., of Buffalo, and the No. 25 Maxwell, driven by A. G. Schoenthal.

The winner of division 2 was the No. 25 Maxwell, runabout class, with No. 16 Paige-Detroit, second, and No. 9 Kirt, third. In division 3, runabout class, the No. 19 Warren-Detroit was the winner with the No. 7 Maxwell, second. The winner in division 2, touring car class, was the No. 8 Hupmobile, with No. 22 R. C. H., second.

Charles F. Monroe of the Monroe Motor Car Co., which concern entered the No. 25 Maxwell, and the Poppenberg Motor Co., which entered the No. 19 Warren, have filed a protest with Referee Kreinheder in the matter of who is entitled to the Laurens Enos and Vars trophies. Before rendering his decision Referee Kreinheder will communicate with the contest board of the American Automobile Association at New York city and he expects to announce the winners of the trophies on Friday night.

The run just completed covered 838 miles and was filled with thrilling incidents. The contesting cars, nine in number, headed by the pilot car, a Studebaker 30, with George Crist, driver, the pacemaker and referee's car, Premier, Ray MacNamara, driver, and the chairman's car, Pierce-Arrow, with Charles A. Pond at the wheel, started at 5:30 o'clock on

Field a Small One But Contest Proves to Be Interesting

Wednesday morning from the city of Buffalo.

The rules of the contest were to the effect that penalties would be imposed for taking on gasoline, oil or water short of 100 miles of travel; for late arrivals at noon controls, and for all repairing done on the machines. No penalties were to be imposed on work done on tires with the motor in operation but time consumed on tire repairing was to be added to running time of cars.

The contestants covered 210 miles on the first day and the performances of the various cars was highly creditable, although heavy rains were encountered all the way to Smethport, Pa., which was the noon control.

A slight accident marred the second day's run, when the McFarlan six overturned between Ripley and Findlay Lake, a distance of 75 miles from Buffalo. Although the occupants of the car including the driver, Winfield Graham, escaped with slight bruises, for a time it looked as if the car was out of the contest for the balance of the day, but the car was righted and the motor resumed operation in about 1 minute and the car finished the run only 10 points being chalked against it for the accident.

The second day's run was marked by fine weather and considerable beautiful scenery and the roads were fine.

On the third day the chairman's car containing driver, Charles Pond, and Orson E. Yeager, chairman, had a narrow escape from plunging through a bridge. The driver observed several loose planks on the bridge but it was impossible to stop the car in time and the driver had one alternative, either to crash into the bridge or apply the brakes and go into the stream. Luckily he chose the latter course. The car splashed into a creek but fortunately it had a substantial foundation. However, the occupants were badly shaken up, but no one was injured save receiving minor bruises. It was decided to make the best

RESULTS IN RELIABILITY RUN OF AUTOMOBILE CLUB OF BUFFALO

No.	Car	Driver	Division	Hour	1st Day		2d Day		3d Day		4th Day				Total Penalties
					Time	Work	Time	Work	Time	Work	Time	Work	Time	Work	
7	Maxwell	G. M. Wolf	3	18	0	4	0	0	0	0	0	0	0	4	4
8	Hupmobile	C. Almondinger	2	18	0	6	0	0	0	0	0	0	0	6	6
9	Krit	R. Langham	2	18	0	0	0	0	0	0	0	37	0	37	37
10	McFarlan six	W. Graham	5	20	0	0	0	10	0	16	52	98	52	124	176
16	Paige-Detroit	B. Malcolm	2	18	0	0	0	3	0	0	0	0	0	3	3
19	Warren-Detroit	H. Holcombe	3	18	0	0	0	0	0	0	0	0	0	0	0
22	R. C. H.	W. Schroeder	2	18	0	3	0	3	0	3	0	0	0	9	9
25	Maxwell	A. Schoenthal	2	18	0	0	0	0	0	0	0	0	0	0	0
31	Amplex	Barclay-Stains	7	20	0	0	0	0	0	0	Withdrawn				

Maxwell and Warren-Detroit in the Tie

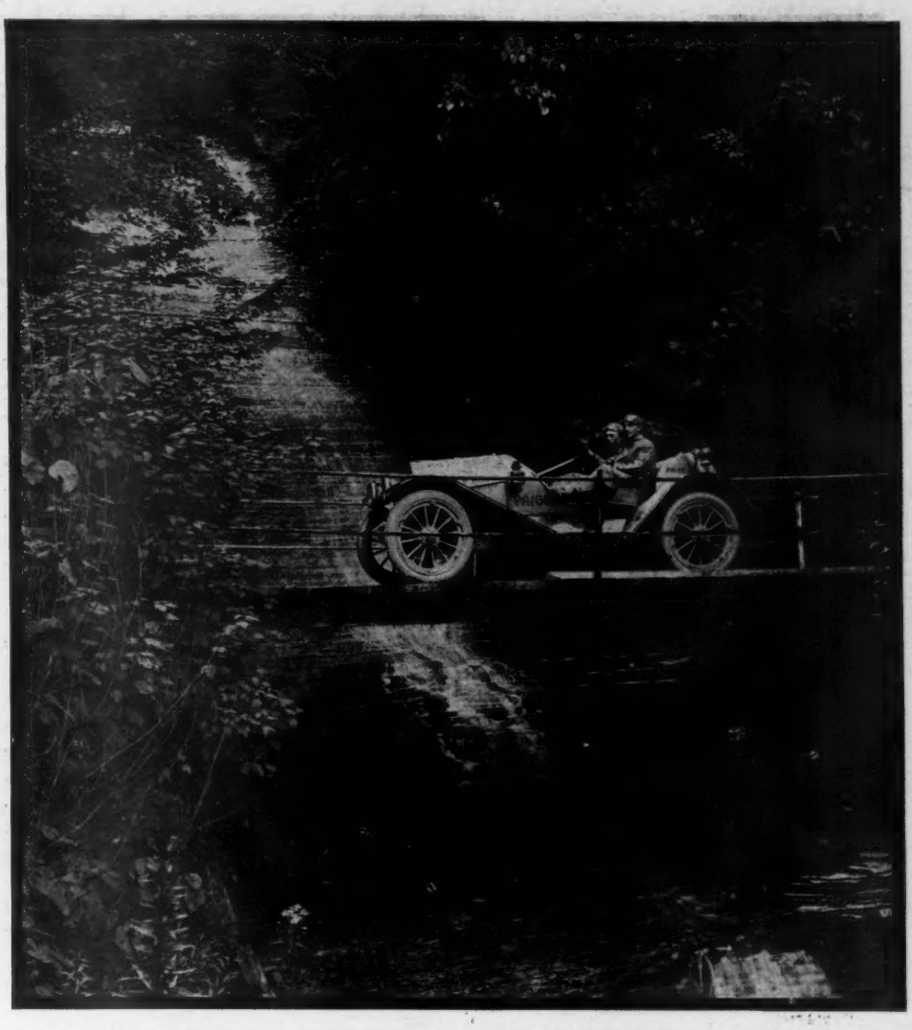
New York Affair a 4-Day Run Over All Sorts of Roads

of the situation and the stream was forded. All contesting cars splashed through the stream and reached the noon control at Canandaigua on schedule time.

On the concluding day of the tour 198 miles were made among steep winding hills and long stretches of rough dirt roads. In climbing Clarksburg hill, which elevation has twelve short deep turns in a mile and a quarter, great difficulty was experienced owing to depressions and soft earth The pilot Studebaker lost 20 minutes in making this climb and the soft earth in the narrow road pressed into a rut made climbing of the hill dangerous. The noon control at North Java was reached on schedule owing to there being no broken bridges or railroad crossings. The return trip was made over bad roads, making progress slow.

CHICAGO PATHFINDERS ON TRAIL

Chicago, Sept. 16—John G. De Long is out in a pathfinding Velie blazing a trail for the Chicago Motor Club's sensational reliability run around Lake Michigan which is scheduled for starting October 21. It is figured that the total distance will be something like 1,050 miles, with the night stops at Oshkosh, Escanaba, St. Ignace, Traverse City and Grand Rapids. Enthusiasm over the contest runs high and already there are entered a Chalmers, two Velies, two Stutzes, a Falcar and a Briggs-Detroiter.



PICTURESQUE SCENE ON BUFFALO RELIABILITY—PAIGE-DETROIT CROSSING RUSTIC BRIDGE IN VICINITY OF BUFFALO

COLORING NEW YORK ROUTES

Albany, N. Y., Sept. 16—Acting upon the recent suggestion of Frank D. Lyon, secretary of the New York State Automobile Association, Superintendent Reel, highway department, officially designated on Saturday the main highway routes of the Empire state by colors for convenience of motorists.

Five routes have been designated—red, blue, yellow, green, brown. Coloring of the routes will begin at once. Fences and approaches along the routes will be painted by the highway department and telegraph poles will be banded in colors by local motor clubs. Colored disks will designate routes through towns, and maps will be prepared showing the color scheme. These colors will be used on following routes:

Blue—New York to Buffalo via Poughkeepsie, Albany, Schenectady, Utica, Syracuse, thence by two branches, one through Rochester, the other through Auburn and Geneva to LeRoy, to Buffalo.

Red—New York to Jamestown, to be known as overland trail as blazed by the A. A. A. to the west along the southern tier. It will go through Nyack, Goshen, Middletown, Binghamton, Elmira, Hornell, Olean, Salamanca, and Jamestown and thence west.

Yellow—New York to Canadian border and return, skirting the Adirondack mountains. This route goes northward through Mount Vernon, White Plains, Dover Plains, Chatham, Valatie, Troy, Eagle Bridge, Salem, Middle Granville, Ticonderoga, Westport, Elizabethtown, Lake Placid, Saranac Lake, Paul Smiths, to Malone, thence to Ogdensburg, Alexandria Bay, Watertown, Copenhagen, Boonville, Utica, Mohawk, Cooperstown, Colliers, Stamford, Arkville, Kingston, Newburgh, Nyack, and New York.

Green—Binghamton via Albany and Rouse's Point to Niagara Falls, routed through Oneaonto, Albany, Saratoga Springs, Lake George, Chestertown, Schroon Lake, Elizabethtown, Keeseville, Plattsburg, Rouse's Point, Malone, Potsdam, Canton, Antwerp, Watertown, Pulaski, Oswego, Rochester, Lockport and Niagara Falls.

Brown—Oswego to Binghamton via Syracuse and Cortland.

DAMAGES GIVEN AGENT

Elmira, N. Y., Sept. 16—In the action of the Foreman Brothers Electric Co., Paducah, Ky., which concern recently went into bankruptcy, against the American Motor Sales Co. of Elmira, N. Y. for $25,000 damages for alleged breach of contract in that the Elmira motor concern refused to allow the Kentucky company to handle its cars after the insolvent condition of the latter firm was ascertained, Judge John R. Hazel, in the United States district court convening in Canandaigua, N. Y., last Saturday, directed the jury to return a verdict of $1,250 for the Kentucky corporation which amount was deposited at the time the arrangement was made. The Elmira firm consented that judgment against it be made for the amount of the deposit.

REASONS FOR THE BUFFALO PENALIZATIONS

No. 7, Maxwell—First day, replaced terminal wire, 4 points

No. 8, Hupmobile—First day, gesoline twice, 6 points

No. 9, Krit—Fourth day, work, 37 points

No. 10, McFarlan—Second day, work, 10; third day, work, 16; fourth day, late, 52; work, 98

No. 16, Paige-Detroit—Second day, work, 3

No. 22, R. C. H.—First day, water, 3; second day, work, 3; third day, water, 3

Makers Take Kindly to Carl Fisher's Idea

NEW YORK, Sept. 16—By the motor car manufacturers of Indianapolis, Ind., agreeing to subscribe in one evening last week $330,000 to the project of buying crushed rock for a transcontinental highway from New York to San Francisco, the movement for practical road construction by the motor industry has advanced one step further into the realm of the practical.

The plan of securing from each car or accessory manufacturer one-third of 1 per cent of his gross business for 3 successive years gives promise of becoming feasible. This has been demonstrated by the attitude of Indianapolis and the motor interests of that city have agreed that there is another $150,000 coming. In the first meeting all but three of the car concerns agreed to the proposition and signed the documents. The three not ready to sign are heartily in favor of the movement, but due to the holiday season could not close the matter.

Others Interested Also

The movement in the Hoosier capital has not been confined solely to manufacturers of gasoline machines, electric machines and accessories. One sporting goods house agreed to give its percentage on the sporting department of its business. Another enterprise was one department only devoted to the motor trade signed the original document. Many of the dealers were particularly anxious to enter into the proposition and become one of the many working for practical good roads.

Towards the end of last week the field of activities was centered in Detroit, where the matter was before the consideration of S. D. Waldon, R. D. Chapin and James Couzens, who are the good roads leaders of the Detroit motor industry. A meeting is scheduled for the end of this week, when it is expected something definite on Detroit's attitude will be announced. Much of the ultimate success of the movement is dependent on the attitude of Detroit, Cleveland and Buffalo, and should these three centers act in unity on the proposition there is no doubt but that America's first great road across the country will be assured.

Once the manufacturers have subscribed the necessary $10,000,000 to furnish road-building material, there is not a question but that the good roads movement will have injected into it a spirit of the practical that has up to the present been unknown in the good roads field. This action should serve as a precipitation in the entire movement, the value of which will not be confined to one transcontinental highway, but to all transcontinental highways and to highways linking the north with the south, and others in various parts of the country.

S. D. Waldon, of the Packard company, recently returned from a 6,000-mile motoring trip in the western states, was wonderfully impressed with the spirit of road movement in Nevada and Wyoming, in each of which states much practical work has been done during the last year.

Detroit Expected to Back Up the Hoosiers in Road Scheme

"There are only 100 miles of what might be designated real bad roads in the transcontinental trip west of Denver," said Mr. Walden. "There is a 20-mile stretch at Fallon in southwestern Nevada, extending from 16 miles before reaching this village and 4 miles beyond; there also is an 80-mile stretch in the region of Montello. Generally speaking, Nevada has good gravel for road construction, and while it is 340 miles across the state by the transcontinental trails, there really are but 50 miles of this bad road, this 50 being made up of the district at Fallon and a portion of that at Montello, the major part of the Montello stretch being in the state of Utah. Two-thirds of the way across Wyoming it is possible to travel at 30 or 40 miles per hour, although in parts of this state the roads are bad. The mud flats of Utah are very bad and will call for considerable energy. The garage men along the line of transcontinental highways are already wide awake to the possibilities of developing their business and today there are better garages along the transcontinental routes in these states than along many of the routes of Massachusetts. To those who have not traveled west it is almost impossible to picture the beauties of the landscape, and if the public was aware of the advantages of touring through this section on improved highways there would not be any difficulty in securing the funds for building such a roadway."

Some Favor Brick or Cement

Although the original plan of this motor highway was a stone road, many manufacturers are already talking in favor of brick or cement. The sentiment is general that a highway of this nature should be free from maintenance costs for at least 10 years, and the only road materials considered in this class would be cement and brick. It is not known exactly what materials of this nature would cost, but it is undoubtedly true that both the brick and cement interests would be quick to revise their price schedules when the opportunity for such an enormous national undertaking presented itself.

The practical spirit of do-something voiced in this latest road movement has struck a responsive chord practically from one side of the country to the other. This practical aspect of road-building stands out strongly in relief as compared with the oratorical methods so generally used up to the present. The roads movement has gone through a long educational campaign, and everybody is watching for a precipitation of the practical regime. The people owning cars today have a desire to tour over the western states before they are too old to enjoy it, and there is only one way to accomplish this and that is by some precipitation planned such as the present one.

FIRE CHIEFS MEET IN DENVER

Denver, Colo., Sept. 18—That the gasoline or electric motor has almost entirely supplanted the horse as a means of propulsion for fire-fighting equipment is emphasized more strongly than ever at the fortieth annual convention of the International Association of Fire Engineers which opened here yesterday.

For the first time in the history of fire apparatus exhibitions held in connection with these conventions there is not a single piece of horse-drawn apparatus shown at the exhibits at the Auditorium. The motor equipment has crowded out the horse.

Of $100,000 worth of motor apparatus on exhibit, the most interest among 500 fire chiefs was created by the monster Graham pump shown by the Seagrave company. It is claimed it delivers 1,000 gallons per minute at 120-pound pump pressure. It is a multiple stage centrifugal turbine pump with a 165-horsepower six-cylinder motor. The needs of fire apparatus are considered by tire makers, who are showing special tires in the exhibits of Swinehart, Firestone, Republic, Goodyear, Goodrich and Fisk.

Other parts and accessories makers paying attention to needs of fire equipment are illustrated by the special axle construction of the Sheldon Axle Co. and the special Bowser storage tanks for fuel and oil in stations.

The convention opened yesterday. The chiefs were welcomed and offered the freedom of the city by Mayor Arnold. At a meeting in the afternoon a paper on the triple combination hose wagon, chemical and pumping engine by Chief Connery, New Castle, Pa., aroused great discussion, but the general opinion seemed to be that this new combination, possible only with motor drive, was valuable for smaller cities and outlying districts because almost all the equipment needed at a fire was on this one unit.

Today tests of motor pumps by the chiefs and the National Board of Fire Underwriters are in progress. Yesterday wives and families of chiefs were taken to the foothills in motor cars as guests of the Denver Motor Club.

Peugeot Makes Good Its Speed Claims

Aftermath of the Sarthe Road Races Reflects Glory on French Concern

PARIS, Sept. 9—As announced by cable in Motor Age, Jules Goux won the Sarthe grand prix 402 miles race in a Peugeot identical with the car with which his team mate, Georges Boillot, captured the grand prix at Dieppe. He averaged 73 miles an hour. The performance broke all European records for this distance and finally classed the Peugeot as the fastest long-distance racing car France has ever produced.

Incidentally, this was one of the cars which should have been sent to the American races at Elgin and Milwaukee, but at the last moment was kept back to race at Le Mans, owing to misunderstanding between the American backers and the French firm. It was fortunate that the Peugeots were kept at home, for without them the free-for-all class at Le Mans would have been a hollow event. Wagner's Fiat, which was to have been driven by an amateur, failed to turn up; Christiaens had not applied for insurance in time and could not start his Excelsior; De Lange's 4-year-old Darracq was unaccounted for. This left the two Peugeots belonging to Goux and Boillot, a Crespelle with long-stroke single-cylinder de Dion motor and practically a stripped touring model Spa, driven by Leduc. As the Peugeots could walk around their rivals, there was an entire absence of competition in this class; nevertheless, in view of their reputation, they were in honor bound to maintain a fast pace, and they maintained it.

Boillot Makes Race a Joke

Boillot, who had started last, came in at the end of his first round for a tire. He took a spare and went away with a grin—a sure sign that it was not a real race so far as he was concerned. At Dieppe it was too serious to admit of even a suspicion of a smile. At the end of a second round he pulled in for another tire. After a third round he took a wheel in place of one that had shed its tire. After the fourth round he stopped again, crawled under his car to look at the universal housing, peeped at his motor, and went on. On the fifth he made the record of the race—35.55 miles in 25 minutes 9 seconds, including a stop for a tire—being equal to 79.9 miles an hour. Making a deduction for the stop the average speed for the round was about 85 miles an hour.

Later he was brought in by Duray's Alcyon, still wearing the happy smile, which at once destroyed the report that he had killed a spectator and confirmed the impression that the race was not of supreme importance so far as he was concerned. His accident was not altogether unexpected and was irreparable. One of the bolts holding the exhaust manifold had broken; a repair was effected at the last minute, but as the bolt went through the waterjacket a leak was feared. It was after the fast round that the water began to get away, finding a passage into the crankchamber and the oil reesrvoir and suddenly causing the complete seizure of the engine.

With Boillot out ,it remained for Goux to maintain the Peugeot fame. He did it by covering the twelve rounds with nothing more than three punctures and a stop at half time to fill his tanks. His fastest round was his third, covered in 25:16. Leduc's Spa, obviously no match for the Peugeot, ran around at a creditable speed without any incident of note, coming in 80 minutes after the winner. The 3-year-old Crespelle had a series of little troubles which succeeded in putting it out of the running at three-quarter distance.

Course Slower Than Dieppe

In the opinion of all the drivers this course was not as fast as that at Dieppe. It was practically flat, or with long straight gradients of about ¼ per cent on which it was impossible to get up the highest speeds. At Dieppe, on the other hand, there were some exceptionally long switchback sweeps giving maximums of 125 miles an hour.

The competition lacking in the big class was provided in the 3-liter section. The two sets of cars were run together, the small ones going away first at intervals of 1 minute and the big ones after. Lion-Peugeot, Alcyon, Schneider, Vinot-Deguingand, Hispano-Suiza, Crespelle, Cote, Picker and Koecklin were the firms represented. Thomas, in a Lion Peugeot, set a fast pace, coming round to the stands before Boillot had got away, and maintaining an average of 70 miles an hour, a really fine performance for a car of 3.07 by 6.14 inches bore and stroke.

After his fast initial round Thomas disappeared; Zuccarelli took his place, with Barriaux and Duray, both in Alcyons, hard after him, and the two Vinots pressing the Alcyons close. The Schneiders were further down the list, but going well. After three rounds Zuccarelli with the small Lion-Peugeot had got ahead of Boillot with the big Peugeot and had a lead of more than 4 minutes on Barriaux, the nearest rival in his own class. Champoiseau of the Schneider firm had pulled in ahead of the Vinots and Croquet, another Schneider man, was just to the rear of the Vinots.

At half distance six cars were closely bunched, the intervals between them varying from a few seconds to 6 minutes. On the seventh round Duray began to have trouble with the valve springs of his Alcyon and realizing that the race was finished as far as he was concerned, stopped to bring Boillot home on his car.

At this time the greatest excitement of the race was felt. Zuccarelli was being dangerously pressed by Barriaux in the Alcyon; the Vinots were running the Alcyons close and Champoiseau and Croquet, of the Schneider team, had a personal jealousy in addition to their desire to beat the others. Guyot, after his long delay, had got into the running in excellent style, although obviously unable to wipe out the initial handicap of 2 hours.

On his seventh round, after making second best timefi Guyot pulled in for gas. He filled the dashboard tank from a big can without the use of a funnel, and in doing so allowed a considerable amount of gasoline to run over the car. Just as he was pulling away there was a pop at the carbureter and at the same instant flames appeared around the filler cap. Guyot and his mechanic jumped out and instinctively backed away from the car, while the grandstand spectators began to run at the fear of an explosion of the tank. But no explosion came, and after a few seconds of panic rags were thrown in to stifle the flames and in 5 minutes the fire was extinguished. Having replaced his burned out ignition wires, Guyot continued, put up a couple of fast rounds, but was unable to finish in the time limits.

Finish Is Exciting

Towards the end Zuccarelli and Barriaux were fighting for first place, with Champoiseau in a Schneider and Molon in a Vinot struggling for the following positions. The final result was doubtful when, with only 20 miles to run ,a ball bearing broke in the steering gear of the Alcyon car, making an easy win for Zuccarelli's Lion-Peugeot, putting Champoiseau's Schneider second with Molon's Vinot a very close third and Croquet's Schneider fourth. Duray had been held back by valve spring troubles. The two Cotes were regular without being particularly fast, and Riviere's Hispano-Suiza, a 4-year-old model of 2.5 by 7.8 inches bore and stroke, did not show itself equal to the modern cars. Summary:

BIG CARS

	Time
Goux, Peugeot	5:31:54
Leduc, S. P. A.	6:55:18
Boillot, Peugeot (out 7th lap); seized engine	
Crespelle, Crespelle (out 10th lap); broken valves	

SMALL-CAR RACE

Zuccarelli, Lion-Peugeot	6:12:22
Champoiseau, Schneider	6:30:36
Leon Molon, Vinot	6:31:31
Croquet, Schneider	7:00:33
Lucien Molon, Vinot	7:16:13
Nicodemi, Schneider	7:17:36
De Vere, Cote	7:41:35
Riviere, Hispano-Suiza	7:50:06
Duray, Alcyon	8:12:10
Ollier, Cote (out 10th lap).	
Barriaux, Alcyon (out 12th lap).	
Guyot, Picker-Guyot (out 9th lap).	
Jaubert, Schneider (out 8th lap).	
Koecklin, Koecklin (out 3d lap).	
Thomas, Lion-Peugeot (out 2d lap).	

To Give Gliddenites a Royal Send-Off

Detroit Will Entertain Tourists Before Start—Details of Route to New Orleans Announced—Description of Trophy Hung Up by American Automobile Association

DETROIT, MICH., Sept. 16—Preparations on a most elaborate scale are being made by Detroit motorists for the start of the annual national endurance run of the American Automobile Association from this city to New Orleans on October 7. The national tour committee has made arrangements with members of the Wolverine Automobile Club to furnish cars to carry the tourists around the city, before the start, passing all the big motor plants. On Saturday, October 5, the tourists are to be escorted to a special ferry and taken to Walkerville, Ont., where they will be entertained by the Walkers themselves. That same evening there is to be given a ball in honor of the women who are going on the tour, while following that there will be a midnight smoker for the men. On Sunday the visitors will be taken for an all-day trip on a large lake steamer.

The route as laid out calls for a journey of 1,670.3 miles along the following trail:

October 7—From Detroit to Fort Wayne, Ind., 170.5 miles—Through Ypsilanti, Clinton, Tecumseh, Adrian, Wauseon, noon stop; Archbold, Bryan, Hicksville.

October 8—From Fort Wayne to Indianapolis, 137.6 miles—Through Bluffton, Ind., Petroleum, Muncie, noon stop; Anderson, Noblesville and Pendleton.

October 9—From Indianapolis to Louisville, Ky., 135.8 miles—Through Franklin, Edinburg, Columbus, Seymour, noon stop; Brownstown, Kossuth, Salem, Perkin, and New Albany.

October 10—From Louisville to Mammoth Cave, 116.9 miles—Through Bardstown, New Haven, Buffalo, noon stop, and Horse Cave.

October 11—From Mammoth Cave to Nashville, Tenn., 107 miles—Through Cave City, Bristow, Bowling Green, noon stop; Franklin, and Goodlettsville.

October 12—From Nashville to Sheffield, Ala., 125.6 miles—Through Franklin, Tenn., Columbia, Mt. Pleasant, Summertown, Lawrenceville and Florence.

October 13—From Sheffield to Rogers Springs, Tenn., 98.8 miles—Through Tuscumbia, Cherokee, Iuka and Corinth.

October 14—From Rogers Springs to Memphis, 69.5 miles—Through Grand Junction, Moscow and Colliersville.

October 15—From Memphis to Greenwood, Miss., 175.3 miles—Through Lynchburg, Tunica, Lula, Clarksdale, Tutwiler, Glendora and Schlater.

October 16—From Greenwood to Jackson, Miss., 170.7 miles—Through Sidon, Lexington, Pickens and Canton.

October 17—From Jackson to Magnolia, Miss., 155.5 miles—Through Terry, Hazlehurst, Brookhaven and Johnston.

October 18—From Magnolia, to Baton Rouge, La., 87 miles—Through Kentwood and Dennis Mills.

October 19—From Baton Rouge to New Orleans, La., 116.7 miles—Through Kenner and Darrow.

The A. A. A. trophy, which is to be awarded to the entrant of a touring car which makes the lowest score, will be placed on exhibition at national headquarters during the coming week. The trophy is in the form of a cup, about 24 inches in diameter and 25 inches high, symbolic of the national character of the annual motoring event; the handles are formed by two eagles, beneath which are conventionalized motor car wheels. Around the top of the cup is a border, depicting touring in the Yellowstone park, semi-tropic scenes from California, Mount Washington and the sunny south. In the center of the front is a cartouche, in which appears the emblem of the A. A. A. This is the well known interlaced wheels with the letters A. A. A. of gold in high relief. On either side of the cartouche are figures symbolizing endurance and speed, the figure on the right expressing transmission of power.

Around the base of the cup is placed a border of ivy, entwined with ribbons, bearing the names of the state associations affiliated with the national body. The reverse of the trophy will bear the emblem of victory, a laurel wreath, within which will appear the inscription. The weight of the trophy is over 300 ounces, and, contrary to usual custom, the eagles surmounting it are solid. It rests upon an ebony base, the top of which forms a turn-table, so that the cup may be viewed from all sides without lifting.

BLOW FOR GOOD ROADS CAUSE

Columbus, O., Sept. 16—Official returns from eighty-eight counties in Ohio show that the proposed amendment to the Ohio constitution voted upon at a special election September 3, providing for the issuing of $50,000,000 bonds for the construction of a system of inter-county highways, was defeated by a vote of 272,560 for and 274,587 against, which is a majority of 2,027. It is a great disappointment to the good roads people of the Buckeye state as it was believed the measure was sure of passage. The most of the opposition came from counties which had improved highways and the people did not want to be taxed for the construction of roads in other counties where they had not been improved.

MEXICO WANTS ARMY CARS

City of Mexico, Mexico, Sept. 14—It is probable that congress at its present session will make an appropriation for the purchase of a large number of motor cars for use in the army. The purchase of several motor trucks also will be recommended by the war department.

The use of motor cars by army officers during the campaign which is being waged against the rebels in different parts of the republic has proved so satisfactory that it is planned that they shall, to a large extent, take the place of cavalry horses. The cars that are now in use by army officers are privately owned, but if it is deemed proper by the government they will form a part of the army equipment in the future.

General Victoriano Huerta has used an American seven-passenger Packard motor car all through his campaign against General Pascual Orozco and his rebel force in northern Mexico. He has found it a great advantage to him in traveling from place to place and in reaching points on short notice. Ordinarily on his trips General Huerta is accompanied by several members of his staff including a guide and engineer.

It is not known as yet how many motor cars the government contemplates providing for the officers of the army, but it is expected that all generals of divisions and colonels and lieutenant-colonels of regiments will be thus equipped at government expense. The motor trucks will be used chiefly for transporting ammunition and supplies.

TRUCKS FOR FRENCH AVIATORS

Paris, Sept. 6—Military aviation developments are profitable to the motor car business, for it is recognized that aerial scouts cannot do effective work in their own element unless adequately seconded by motor vehicles below. An example of this is shown by the recent delivery of sixty-three special trucks to the French army, all these trucks to operate with the aerial corps participating in the annual fall maneuvers to be held in a few days. The firms having received the commands are Panhard-Levassor, de Dion-Bouton, Delahaye, Aries, Brasier, Berliet, and Clement-Bayard. Each firm has delivered three trucks for carrying and housing an aeroplane and six wagonettes for the transport of mechanics and the usual aeroplane spares.

Trucks have very little that is distinctive, being the ordinary army type of motor wagon having a platform body with extensible canvas top. This top is mounted on telescoping hoops, making it possible to increase the height sufficiently to house a complete aeroplane with the wings folded against the fuselage. The vehicles will serve not only for carrying the aeroplanes from one headquarters to another when it is undesirable that they should cover the distance by flying, but they also provide protective cover for camping out. One of these trucks is attached to each aeroplane in the field.

The wagonettes have carrying capacity for ten persons, including the driver, two of the men being in front and eight within the rear entrance open body, sitting face to face. The wagon hauls a two-wheel trailer having a single shaft, at the end of which is a coupling for rapid connection to the rear of the wagonette. On this trailer are carried such common aeroplane spares as propellers, wires, skids,

wheels, and a few of the ordinary engine parts. The duty of these vehicles is to render first aid to aeroplanes, the men carrying out such repairs as can be accomplished without a workshop equipment.

In addition to these sixty-three vehicles orders have also been placed with de Dion-Bouton and with Delahaye for traveling motor car workshops. They consist of a 5-ton chassis mounted on rubber-shod wheels with a special closed body containing a lathe, drilling machine, band saw, forge, etc., all of them driven electrically and the entire workshop lighted by electricity. Each side of the truck body is hinged to open the lower of the two portions forming an extension of the floor space, and the upper portion giving protection against sun and rain. One of these traveling workshops is attached to each aerial escadrille—an escadrille comprizing six aeroplanes, generally of one make and type. They are so equipped that any repair to either the aeroplane or its engine can be carried out on the field. The repair wagon remaining near the headquarters staff has a low rate of travel.

SHOW AT MILWAUKEE FAIR

Milwaukee, Wis., Sept. 16—The most pretentious exhibit of motor cars ever made in Milwaukee, outside of the annual indoors show in the Auditorium, was the display made by Milwaukee dealers and state agents at the annual Wisconsin state fair, September 10 to 14. Machinery hall, an absolutely fireproof structure of solid concrete, was devoted entirely to motor car and accessory exhibits, the value of which was enhanced by the fact that demonstrators were permitted to operate motors and mechanisms while under roof. Exhibitors report good results, the rural visitors taking a deep interest which was by no means lacking of development into actual sales.

State agents are particularly pleased with the results obtained, having closed many contracts for local representation.

ANOTHER CHICAGO TEAM MATCH

Chicago, Sept. 16—The fall team match between the Chicago Athletic Association and the Chicago Automobile Club has been set for Saturday, October 5, when the two rivals will line up for a one-day run to George Ade's Hazelden farm at Brook, Ind., and back, with the Allen Ray and Carleton White trophies as the bone of contention. The novelist has extended an invitation to his fellow club men to pay him a two-hour visit and he will entertain them as he did the Chicago Motor Club reliability last fall. The finish of the match is to be at the South Shore Country Club, where the losers will pay for the dinners for all parties concerned.

Chicago Dealers Hold Fall Festival

Annual Display of New Cars Opened With Motor Truck Parade Participatedin by 700 Machines, Biggest Turnout of Commercial Vehicles Windy City Ever Has Had

CHICAGO, Sept. 14—Ushered in by a parade of 700 motor trucks in a procession 10 miles long, moving at the rate of 10 miles per hour, and taking 1 hour 10 minutes to pass a given point, the Chicago Automobile Trade Association heralded the second annual fall opening tonight. The occasion is the formal introduction of the 1913 models to the public, and the signal inauguration of the fall buying season, the new year of the motor calendar. Chicago's motor row boulevard, which is 3 miles long, has been garlanded with autumn decorations, and at night is lighted by the brilliant illumination of the showrooms and, as in last year's pageant, by electrically-lighted columns, extending along both sides of the street in a classic colonnade of imitation marble and leaded glass, strung with webs of electric lights.

The truck parade was made up of machines privately owned and exhibited, being entered in fleets by the dealers in the respective makes, who recruited cars, pairs, triplets and squadrons from among their customers. Several individual entries were made, notable among which was the Fair, whose division represented ten different makes in all types and capacities. This entry totaled thirty-eight cars.

On Monday night the fire and police department will do the honors. This demonstration will take place both afternoon and evening, and will include a parade and drill of the motor corps of the fire department. On Tuesday electric broughams will parade; Wednesday will be old car day, the veterans parading in the evening; Thursday will be Chicago Motor Club day, a pleasure car parade taking place in the evening; Friday, old and new car day, will also be closed by a parade of cars of all ages in the evening, and the close on Saturday will be celebrated by a tire-rolling contest, the tire companies entering teams of four men to roll the tires of their respective makes in relays, on a course three miles long. Saturday evening there will be a general get-together meeting and supper of the officials and members of the Chicago Automobile Trade Association at the Hotel Metropole.

The large number of entrants in the motor truck parade was unexpected, and proved a big surprise to everyone. Plans had been made for 500 trucks, a course 8½ miles long being laid out. This course proved too short, as the leaders had run the full course and returned to the starting point before many of the other trucks had started.

Perhaps the most notable feature of the exhibition was the silence of the large majority of the cars. This applied not only to the shaft-driven and pneumatically-tired gasoline machines and electrics, but to the prevalent type of solid-tired chain-driven trucks. Many trucks carried full loads, a 5-ton lumber truck being loaded with a large load of lumber, and a truck owned by a cooperage concern being piles high with barrels, a good advertisement of the business.

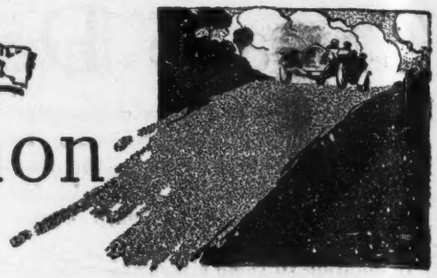
Of the 700 machines in line fifty-seven were electrics. The prevailing type among the gasoline cars was from 1 to 2 tons capacity, chain-driven, with the motor under the seat, and solid tires. A large contingent, however, were of radically different type, as 115 were shaft-driven, and 201 were of the so-called European type, with the motor under the hood, as in pleasure car practice, this type being prevalent in the very small and the largest classes. One hundred and six of the total number were under 1 ton capacity, a large number of high-wheeled wagons being shown. Very few of the big fellows appeared, but seven 5-tonners and eight of greater than that capacity were entered.

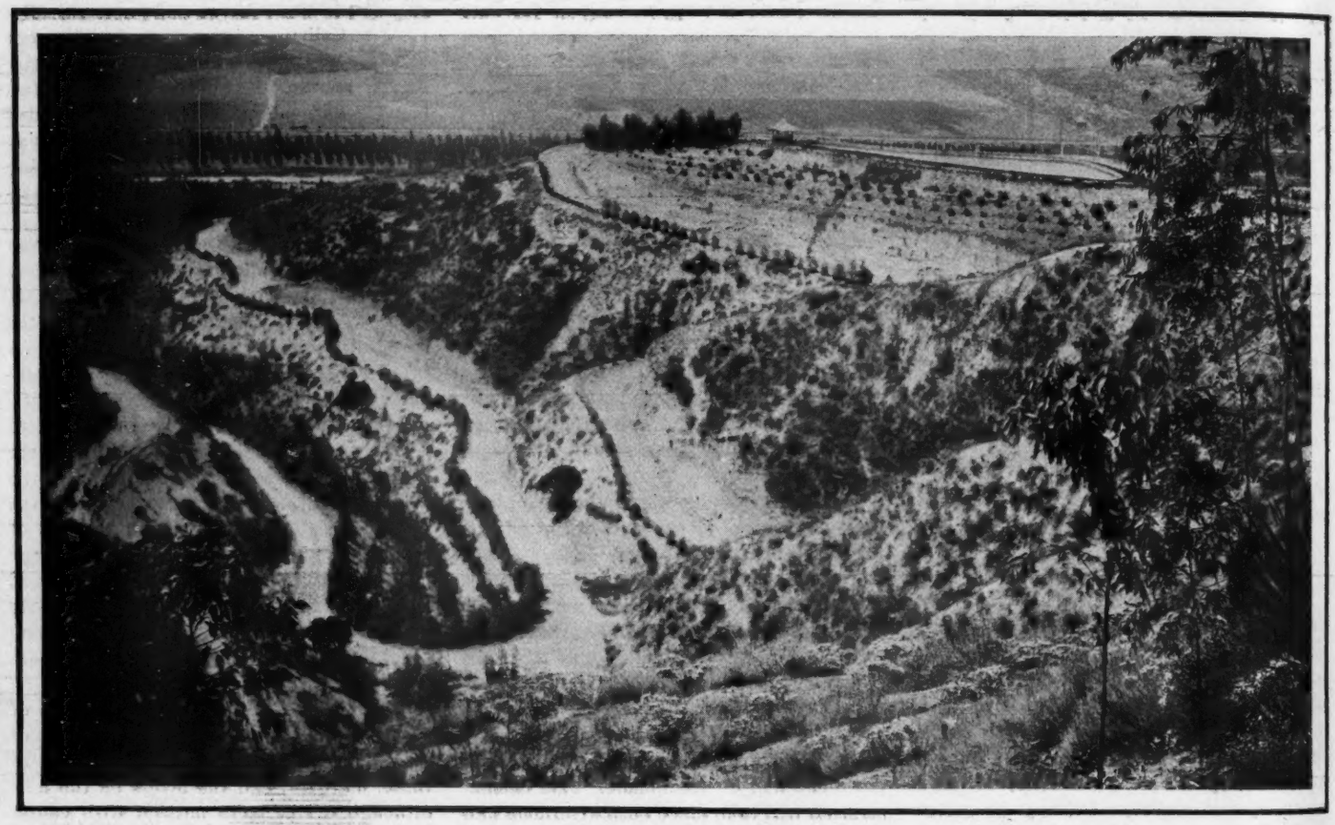
Of especial significance is the growth of the left-hand steer idea, fully 25 per cent of the trucks being so equipped. Most of these, however, had the levers on the left, although a few were noticed with center control, in both right and left hand steer types. Block or sectional tires were not much in evidence, even in the larger sizes, the wide tread dual types seeming to have the preference. Fully a hundred of the machines were equipped with pneumatics.

Some idea of the magnitude of the parade may be had from the fact that the cars were lined up from Fifty-eighth street to Twenty-eighth street on Wabash avenue, a distance of nearly 4 miles, before the start. The line of march, which was 8½ miles in length led from Twenty-eighth street and Michigan avenue to Monroe street and Michigan avenue, 3½ miles north, and from thence through the business section, emerging on Michigan avenue again at Jackson street, and running south from thence to Thirteenth street to the Metropole hotel, the headquarters of the C. A. T. A., where the parade of the trucks disbanded.

The triumphal march through the motor car market to which Michigan avenue from Thirty-fifth street to Twelfth street, a distance of 3 miles, is almost entirely given over, was through a blaze of light and was watched by big crowds.

Routes and Touring Information





SNAKE-LIKE ROAD WINDING UPWARD TO THE RESERVOIR AT SMILEY HEIGHTS

CALIFORNIA motorists are rejoicing at the opening of Smiley Heights, at Redlands, to motor cars, for this famous driveway and pleasure park is one of the finest show places in the state, yet until this year it was open to horse-drawn vehicles only. The reason for the opposition to motor cars on the part of the owner, A. K. Smiley, was that the roads are very narrow, winding and in some places have a rather heavy grade, and he believed that accidents might result from the admission of motor cars. Mr. Smiley is well advanced in years and tenacious in holding to what he considers a well-founded objection, but recently he became the owner of a fine car and his views on the safety of motors underwent a change.

The Automobile Club of Southern California agreed to mark the road, and has done so, warning against a speed greater than 10 miles an hour. This is as fast as any car should travel over the winding road, not alone for safety but because the view over the orange groves and villas, with the snow-capped peaks beyond, is altogether too fine to hurry past. Traffic is directed one way only, as the road is too narrow in some places for cars to pass conveniently. Its surface is perfect, however, free from dust or ruts, and it follows a winding course along ridges bordered with towering eucalyptus trees and set out with rare flowers. There are 15 miles of this private park road, and as it opens upon another scenic road, a public way known as Sunset drive, there is a new treat in store for motorists who visit California this winter.

TO DES MOINES, IOWA

ROCHESTER, Minn.—Editor Motor Age—Please give me the best route between here and Des Moines, Ia.—Fred Young.

Head west to Owatonna through Byron, Kasson, Dodge Center and Eden. The distance is 44 miles and after reaching Byron over rather rolling country with one or two rough spots, it will be level going and quite good.

The main traveled road to Mason City lies through Geneva, Albert Lea, Glenville, Northwood, Kensett and Manley, and is 73 miles; Marshalltown is reached by way of Rockwell, Sheffield, Hampton, Iowa Falls, Eldora, Gifford, Union, Liscomb, Albion and Marshalltown. Two routes are offered you to Des Moines, one through Laurel, Newton, Colfax, Mitchellville, Altoona and Des Moines being 69 miles; and the other over the Iowa transcontinental to State Center, Colo, Nevada and Ames, 39 miles, then south 32 miles through Hukley and Ankeny. Complete running directions are in volume 5 of the Blue Book.

TRIUMPH, MINN.—PORTAL, N. D.

Triumph, Minn.—Editor Motor Age—I should like to have the best route from Triumph to Portal, N. D.—B. R. Pope.

Passing through St. James, Butterfield, and Sanborn you reach the main traveled road to Brookings, S. D., which runs through the towns of Lamberton, Revere, Walnut Grove, Tracy, Balaton, Lake Benton, Elkton, Aurora, Brookings.

The Meridian road now routes through Toronto, Clear Lake, Altamont, La Bolt, Milbank, Big Stone City, Ortonville, Clinton, Graceville, Collis, Dumont, Wheaton, White Rock, Blackmer, Fairmont, Tyler, Wahpeton, Dwight, Abercrombie, Christine, Hickson, Wild Rice, Saunders and Fargo, being 213 miles. This road continues 96 miles to Grand Forks leading through Mapleton, Hillsboro, Taft, Reynolds, Thompson, Merrifield, and Grand Forks.

It is not advisable to cross North Dakota further west than Devil's Lake, unless there are one or two cars with you for you travel mile after mile with no living thing in sight and it is quite hazardous should there be a break-down. However,

if you have a Blue Book volume 5 which has the running directions from Lamberton, Minn., to Minot, N. D., it makes it a trifle better.

Grand Forks to Devil's Lake, 100 miles, is Larimore, McCanna, Petersburg, Michigan, Mapes, Lakota, Bartlett, Crary; then to Minot, which is 138 miles, the towns are Grand Harbor, Churches Ferry, Leeds, Knox, Pleasant Lake, Fero, Turnbridge, Towner, Denbeigh, Granville, Surrey. Inquiry should be made at Minot before leaving for Portal.

INDIANA TO PENNSYLVANIA

Lafayette, Ind.—Editor Motor Age—I would like to know the best route from Lafayette to Pittsburgh, Pa. What are the road conditions and distances? Is it necessary to secure a license in any other state?—J. C. Schuessler.

A direct route would be to motor via Lima and Canton, the entire distance being approximately 416 miles. There is a good gravel road from Lafayette to Lima, O., 164.9 miles through Edna Mills, Sedalia, Middlefork, Burlington, Kokomo, Sycamore, Marion, Montpelier, Keystone, Domestic, Mercer, Mendon, Monticello, Spencerville, Lima.

Leaving Lima with Canton, O., 153 miles, your next objective point on this route, you pass through Ada, Forest, Upper Sandusky, Bucyrus, Galion, to Mansfield over good road; from this point through Mifflin, Hayesville, Jeromesville, Reedsburg, to Wooster you will have some hills to negotiate; thence through Dalton, Greenville, Massillon, Canton.

It is but 98 miles to Pittsburgh from Canton, O., the intermediate points being Louisville, Harrisburg, Alliance, Salem, Columbiana, Unity, O., Darlington, Pa., Beaver Falls, Rochester, Freedom, Economy, Ambridge, Sewickley, Pittsburgh.

An optional route is Industry, Magnolia, New Harrisburg, Carrolltown, Harlem, Amsterdam, Richmond, Wintersville, Steubenville, Paris, Florence, Santiago, Remalton, and Grafton.

Your own state license will suffice, but it must be displayed while touring through the state. The 1912 edition of volume 4, Blue Book, gives complete running directions.

ST. JOE, MO.—KANSAS CITY, MO.

Denver, Colo.—Editor Motor Age—What is the best route to St. Joseph and Kansas City, Mo.? Is it wiser to travel 72 miles to Colorado Springs from Denver and then to Limon, rather than start due east from Denver to Limon?

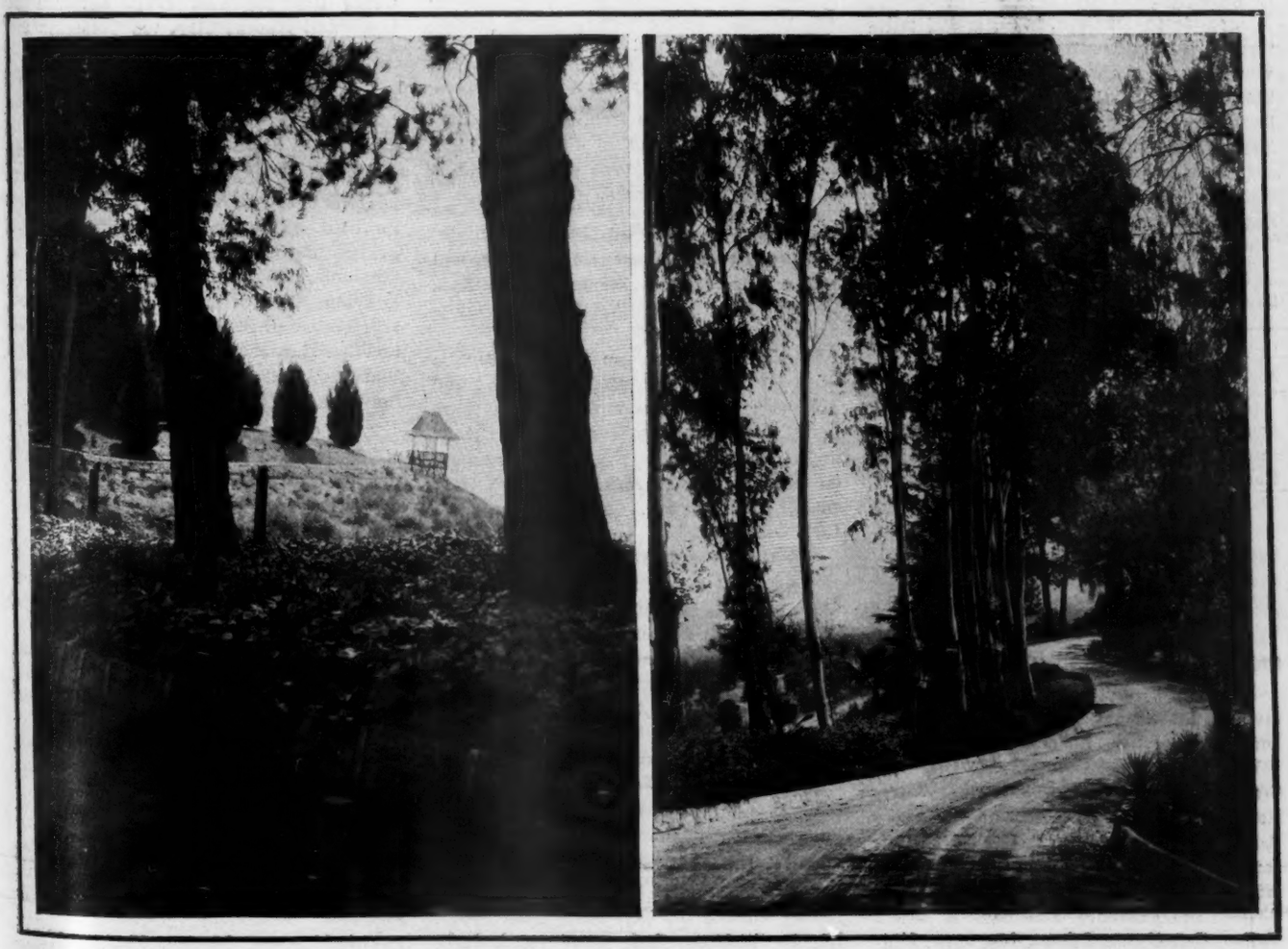
2—There are to be two women in the party, and I would like to know how to divide off each day's travel so as to have easy running.

3—Are the roads in such condition as to justify amateurs making the trip under reasonably pleasant circumstances? Are the road difficulties too great to allow of the trip being enjoyable?—C. H. Wright.

It is probably best to route by way of Colorado Springs to Limon going through Littleton, Sedalia, Perry Park, Palmer Lake, Breed, Colorado Springs, Falcon, Calhan, Limon and is 154 miles the stop for your first night. The next day's run is 149 miles to Colby, Kans., routing through Genoa, Bovina, Arriba, Flagler, Seibert, Vona, Stratton, Bethune, Burlington, Kanorado, Kans., Ruelton, Goodland and Levant.

The third day you will have a little rough going to Mingo and Oakley but from there on good natural roads predominate through Campus, Grinnell, Grainfield, Quinter, Collyer, Ogallah, Hays, Victoria, Walker, Gorham, Russell, Dorrance, and Wilson, being 168 miles; or if good time is made it would be a good thing for you to continue to Ellsworth, Kanopolis, Carneiro, Brookville and Salina, making the mileage 225.

Salina to Topeka is 132 miles, the towns



THE ROAD FOLLOWS A WINDING COURSE ALONG THE RIDGE OVER REDLANDS

TALL EUCALYPTUS TREES LINE THE ROAD TO SMILEY HEIGHTS AT REDLANDS

being Solomon, Abilene, Detroit, Chapman, Junction City, Fort Riley, Ogden, Manhattan, Wamego, St. Mary, Rossville, Topeka.

You can reach St. Joseph the next day as it is 162 miles from Topeka, the road running through Grantville, Perry, Buck Creek, Midland, Lawrence, Endora, De Sota, Bonner Springs, Muncie, Kansas City, Piper, Wallula, Leavenworth, Lowemont, Atchison, Russville, St. Joseph.

You will notice the longest day's run is 225 miles and this should be made for the reason of better hotel accomodations. Faster time can be made on this stretch of road than through the next day's itinerary if you start right after a rain. If you have never done any traveling outside of macadam boulevards you will of course think some stretches are frightful, but with careful driving upon such occasions there is no reason why you should not have a thoroughly enjoyable trip.

It is advisable to provide yourself with a Blue Book Volume 5, which contains running directions of the entire journey.

DUBUQUE, IA.—MENOMINEE, MICH.

Manchester, Ia.—Editor Motor Age—Please publish the shortest route from Dubuque, Ia., to Menominee, Mich.—J. J. Welterlen.

Dubuque to Madison, Wis., is 103 miles through a hilly country but with excellent views routing through Fairplay, Cuba, Elm, Platteville, Calamine, Mineral Point, Dodgeville, Ridgeway, Barneveld, Blue Mounds, Pine Bluff. Fond du Lac is reached over mostly gravel roads and is 73 miles distant through Sun Prairie, Columbus, Beaver Dam, Waupun.

The direct road to Oshkosh is through Van Dyne and is 19 miles, but if you have plenty of time a pleasant detour of 71 miles is Rosedale, Ripon, Green Lake, Berlin, Waukan, and Zion to Oshkosh.

Oshkosh to Green Bay is 55 miles and you will find macadam or gravel roads through Neenah, Menasha, Appleton, Kaukauna, Wrightstown, and De Pere. A 58 mile jaunt over stone or gravel roads leads through Big Suamico, Little Suamico, Brookside, Collardsville, Oconto, Peshtigo, and Marinette. The Blue Book No. 4 will give you running directions with maps and road conditions.

LAMAR, MO.—ROUNDHOUSE, ILL.

Joplin, Mo.—Editor Motor Age—Please give the route from Lamar, Mo., to Roundhouse, Ill.—J. M. Sheets.

Your routing north to Kansas City lies through Irwin, Sheldon, Nevada, Wales, Horton, Arthur, Rich Hill, Athol, Butler, Adrian, Archie, Lonetree, Harrisonville, Belton, Grandview and Kansas City. Crossing Missouri the traveled thoroughfare leads through Independence, Blue Springs, Grain Valley, Oak Grove, Odessa, Mayview, Higginsville, Corder, Blackburn, Mt. Leonard, Marshall, Slater, Glasgow, Armstrong, Huntsville, Moberly, Renick, Clarke, Mexico, Laddonia, Vandalia, Curryville, Bowling Green, and Louisiana. Ferry across the river at Louisiana and continue to Pittsfield, Winchester and Roundhouse.

AN ILLINOIS-IOWA ROUTE

Watseka, Ill.—Editor Motor Age—Please route from Watseka to Shelbyville, Ill., also from Watseka to Webster City, Ia.—W. E. Herrick.

First go to Gilman, then 53 miles to Champaign by way of Onarga, Buckley, Loda, Paxton, Rantoul. The best road to Shelbyville is 86.5 miles through Savoy, Monticello, Maroa, Decatur, as against about 65 miles from Champaign through Tuscola, Arcola, Mattoon and Shelbyville.

Routing to Webster City from Gilman to Kankakee is 29 miles through Ashkum and Clifton; then heading west to Goodrich, Dwight and Streator, north to Grand Ridge and Ottawa and west to Utica, La Salle, Leru, Seatonville, Hollowayville, Princeton, Wyanet, Sheffield, Mineral, Anawan, Geneseo, Briar Bluff, Moline and Davenport, Ia., being 174 miles.

Maysville, New Liberty, Bennett and Clarence will find you on the Iowa transcontinental road which you will follow through Stanwood, Mechanicsville, Lisbon, Mt. Vernon, Marion, Cedar Rapids, Belle Plaine, Chelsea, Gladstone, Tama, Montour, Le Grand, Marshalltown, State Center, Colo, Nevada, Ames, Jordan, Boone, and is 211 miles. Webster City is 33 miles north of Boone.

Running directions from Gilman to Davenport can be found in the Blue Book, No. 4, while the balance of the route is outlined in the volume 5.

QUINCY, ILL.-SEDALIA, MO.

Quincy, Ill.—Editor Motor Age—I would like to know the best route from Quincy, Ill., to Sedalia, Mo.—F. J. Hendrickson.

The best way for you to reach Sedalia is to go by the way of Mexico, Mo., and Marshall, the itinerary for such a route being as follows: Quincy to Hannibal, 22 miles, through Seehorn and Sheperd, and 62 miles further to Mexico, through Oakwood, New London, Center, Hutchinson, Laddonia, Mexico.

Covering a distance of 97 miles over clay and dirt roads, from Mexico to Marshall, you pass through Thompson Station, Clark, Renick, Moberly, Huntsville, Armstrong, Glasgow, Slater, Marshall.

From Marshall go east 38 miles to Boonville, through Arrow Rock and Lamine; from Boonville follow the M., K. & T. railroad to Sedalia.

The Blue Book No. 5 covers the trip, with running directions as far as Boonville.

JOLIET, ILL.-MADISON, IND.

Lafayette, Ind.—Editor Motor Age—Kindly outline the best route from Joliet, Ill., to Madison, Ind., more particularly that portion from Indianapolis to Madison. What kind of roads will I find and what is the total mileage?—Woodside.

Leaving Joliet, go directly east through Cherry Hill, Gaugers, New Lenox, Frankfort, Richton, Chicago Heights, to Dyer; thence through Schererville, St. Johns, Crown Point, Orchard Grove, Thayer, Roseland, Fair Oaks, Aix, Rensselaer, Remington, Wolcott, Montmorenci, to Lafayette, a distance of approximately 140 miles.

From Lafayette to Indianapolis, a route via Frankfort and Kirklin, Ind., follows a good gravel or macadam road the entire distance of 68 miles, through Dayton, Mulberry, Frankfort, Cyclone, Kirklin, Rossston, Augusta, Indianapolis.

Going directly south over fine gravel road from Indianapolis to Seymour, Ind., 63 miles, the intermediate towns are Southport, Whiteland, Franklin, Amity, Taylorville, Columbus, Walesboro, Waynesville, Jonesboro, Seymour. Go east from Seymour about 16 miles to Vernon, from which point it is but a short distance to Madison through Dupont.

This route, with the exception of that portion from Vernon to Madison, is completely covered with running directions in volume 4 of the Blue Book.

SEEKS A MISSOURI ROUTE

Larimore, Mo.—Editor Motor Age—I would like the best route between St. Louis and Kansas City, via Columbia and Boonville, Mo.—Julius O. Trampe.

The route requested follows practically the historic trails of Missouri, that portion from St. Louis to Boonville being over the old Boon's Lick road, and the remainder of the route into Kansas City passing over the first part of the Santa Fe trail. This trip can easily be made in two days, your night stop being at Columbia, Mo., a distance of 141 miles. Leaving St. Louis, the towns en route are: Wellston, St. Charles, Harvester, Colterville, Dardenne, Foristell, Wright City, Warrenton, Jonesburg, Danville, Mineola, Calwood, Fulton, Millersburg, Columbia.

From Columbia it is approximately 160 miles to Kansas City, going through Rocheport, New Franklin, where you take the ferry over the Missouri river, continuing west through Boonville, Arrow Rock, Marshall, Waverly, Dover, Lexington, Wellington, Levasy, Buckner, Independence, Kansas City. Blue Book, volume 5, gives complete running directions.

RIDGEWAY, PA.—TULSA, OKLA.

Tulsa, Okla.—Editor Motor Age—I am going to drive my car from Ridgeway, Pa., to Tulsa, and would like a routing via Cleveland, O., and Kansas City. I know the route to Cleveland.—E. D. Avery.

You can route to Columbus which is 171.5 miles, the best road lying through Rocky River, Oberlin, Kipton, Wakeman, Townsend, Norwalk, Monroeville, Bellevue, Republic, Bloomville, Lykens, Brokensward, Bucyrus, Marion, Norton, Waldo, Delaware, Lewis Center, Columbus.

Columbus to Indianapolis, Ind., is 171.6

miles passing through Vienna, Lafayette, Summerford, Brighton, Vienna, Harmony, Springfield, Donnelsville, Brandt, Fountaine, Tadmore, Vandalia, Englewood, Arlington, Lewisburgh, Gettysburg, Richmond, Centerville, Germantown, Cambridge City, Dunreith, Ogden, Knightstown, Charlottesville, Greenfield, Cumberland, Indianapolis. To reach Terre Haute travel 70 miles further on the National Pike and go through Bridgeport, Plainfield, Belleville, Stilesville, Mt. Meridian, Coatsville, Manhattan, Reelsville, Harmony, Brazil and Seeleyville.

The stretch from Terre Haute to St. Louis is 173 miles by following the main traveled road through Cohn, Marshall, Clarks, Martinsville, Oakleaf, Casey, Greenup, Jewett, Woodbury, Montrose, Teutopolis, Effingham, Dexter, Altamont, Vandalia, Hagerstown, Mulberry, Greenville, Stubblefield, Pocahontas, Highland, Collinsville, and St. Louis.

A very good road is the following: At Bucyrus, head west for Lima by way of Osceola, Upper Sandusky, Forest, Dunkirk, Ada, being 65 miles. A good gravel road lies 165 miles through Spencerville, Domestic, Petroleum, Montpelier, Marion, Swazee, Sycamore, Kokomo, Burlington, Middlefork, Lafayette.

Routing to Springfield, Ill., takes in Odell, Attica, Rob Roy, Stone Bluff, Covington, Danville, Urbana, Champaign, Savoy, Monticello, Maroa, Decatur, Niantic, Lanesville, New Buffalo, Springfield, and is 196 miles.

It is 109 miles to St. Louis over natural dirt roads through the towns of Cotton Hill, Glenarm, Litchfield, Mt. Olive, Staunton, Worden, Carpenter, Edwardsville, Marysville and Collinsville.

Across Missouri the route is Wellston, Lyndhurst, Pattonville, Harvester, Colterville, Dardenne, Wentzville, Foristell, Wright City, Warrenton, Jonesburg, Danville, Mineola, Williamsburg, Calwood, Fulton, Millersburg, Columbia, Rocheport, New Franklin, Boonville, Arrow Rock, Waverly, Dover, Lexington, Myrick, Wellington, Levasy, Buckner, Independence, Kansas City. To Columbia it is 141 miles and to Kansas City it is 159.

Garnet, Olathe, Ottawa, Chanute, Cherryvale, Coffeyville, Oologah, Okla., Collinsville and Tulsa, is the finishing stretch.

HARVEL, ILL.—TABLEROCK, NEB.

Harvel, Ill.—Editor Motor Age—How can I obtain a route map or plan showing the best roads between Harvel, Ill., and Tablerock, Neb.? Would September or October be a good time to make such a trip?—C. M. Forrester.

The route for you to follow lies toward St. Louis through Litchfield, Mt. Olive, Staunton, Worden, Carpenter, Edwardsville, Marysville, Troy and Collinsville. Follow the Boon's Lick road through Wellston, Lyndhurst, Pattonville, Harvester, Colterville, Dardenne, Wentzville, Foristell, Wright City, Warrenton, Jonesburg, Danville, Mineola, Calwood, Fulton, Millersburg, Columbia, Rocheport and New Franklin, 171 miles. Ferry across the Missouri river and go straight into Boonville, and on to Arrow Rock, Marshall, Waverly, Dover, Lexington, Myrick, Wellington, Levasy, Independence and Kansas City.

Go north through Kansas, touching Piper, Leavenworth, Lowemont, Atchison, Lancaster, Huron, Pierce, Everts, Hiawatha, Falls City and is 118 miles. Tablerock is in the next county.

For running directions, maps, etc., the Blue Book No. 4 will give you such information as far as St. Louis, and the No. 5 from St. Louis to Falls City, Neb. Each volume sells for $2.50 and is published by the Blue Book Publishing Co., Chicago.

Blue Book Road Reports

THE Blue Book car has sent in the following reports on road conditions on routes which it has covered during the past week:

A new route is Portsmouth to Maysville, Ky., via West Union. The Blue Book crew, before attempting this trip, knew that conditions were anything but good for tourist travel and they were not disappointed, as they found the road, although a hard one most of the way, to be very rough and through a hilly country a considerable part of the distance.

Maysville to Lexington via Paris was found to be an agreeable change to most of those gone over in southern Ohio. The road is excellent macadam all the way and although quite winding it is direct with some picturesque scenery.

Lexington to Richmond is a short route over good macadam through a beautiful country in the heart of the Blue Grass section.

Richmond to Danville is over macadam road although not quite so good as the previous route.

A new route is from Danville to Louisville. The first part of this trip follows quite closely the Kentucky river valley, which is famous as one of the most beautiful sections in any of the central states. Instead of going to Harrodsburg it is direct to the old shaker settlement at Shakertown, which is only a mile from High bridge, then across Kentucky river at Brooklyn bridge. About a mile north of Brooklyn bridge the route swings westward through Troy into Versailles and Frankfort, where the regular Blue Book route is followed to Louisville.

Louisville to Mammoth Cave via Bardstown and Buffalo. The first part of this route to Bardstown is over excellent stone road and although the remainder is nowhere near so good it is not bad and considerable improvement is constantly being made. Lincoln farm is only 2½ miles from Buffalo and the Blue Book car made this detour to get the directions in order that tourists may easily visit this historic point with a minimum amount of trouble. From Bear Wallow the route goes to Cave City and Mammoth Cave. While in this section data was taken on a cutoff which makes it unnecessary for tourists to go back to Bear Wallow in order to pick up the through route.

Mammoth Cave to Nashville. This route continued southward through Scottsville, Gallitan and Green River. Road conditions on this part of the route are about as bad as they have been pictured to various tourists. Although the worst part of the route is over a comparatively short distance, conditions are so bad that it spoils the whole trip. The worst section is between Magnolia and Green River, conditions ranging from deep sand to large boulders and cobble stones. Although this latter will make a very fine foundation for good roads nothing has been done to improve conditions for a good many years. From local information it is understood that for next year a detour will be completed around this bad part.

Curtis Hill, state engineer of Missouri, reports that due to bridge work and grading which is going on in Howard, Boone and Callaway counties it is advisable for tourists making the trip in either direction between St. Louis and Kansas City to avoid the route through these counties which lie between Boonville and Marshall. People going west from St. Louis should use route 621 instead of route 628 and at Rennick they should leave route 622 going north through Moberly and west through Huntsville, then south again, meeting the regular route at Armstrong. Coming east from Kansas City it is advisable to follow route 710 from Marshall and at Armstrong go north to Huntsville and then east through Moberly and south again, meeting the route at Rennick.

September and October are excellent months in which to tour. Many motor car club runs are held off until these months. An example might be given of a Chicago club starting on a tour around Lake Michigan October 21.

CHICAGO—MANSFIELD, O.

Chicago—Editor Motor Age—Please publish the most direct route from Chicago to Mansfield, O.—H. G. S.

Follow the South Bend route as far as La Porte through South Chicago, Whiting, Grasselli, Gibson, Hessville, Highlands, Schererville, Merrillville, Ainsworth, Deep River, Valparaiso, Westville, Pinhook, La Porte, then route to Fort Wayne through Kingsbury, Union Center, Hamlet, Donaldson, Plymouth, Bourbon, Etna Green, Atwood, Warsaw, Pierceton, Larwell, Columbia City, Fort Wayne, being 173 miles so far.

This can be shortened by leaving the South Bend road at Valparaiso and routing through Wanatah, Hanna, Hamlet and Donaldson to Plymouth, but there is about 20 miles of rather poor road with some sand just beyond Valparaiso.

You can just as well go from La Porte to New Carlisle and South Bend, making this at noon the first day, then to Mishawaka, Osceola, Goshen, Benton, Ligonier, Kimmell, Wolf Lake, Churubusco and Fort Wayne. This makes the distance from La Porte to Fort Wayne 95 miles with the roads from South Bend all good gravel.

Fort Wayne to Mansfield, O., is 155 miles and the towns are New Haven, Van Wert, Delphos, Elida, Lima, Ada, Forest, Upper Sandusky, Bucyrus, Galion and Ontario.

MICHIGAN TO WISCONSIN

Chicago—Editor Motor Age—Kindly inform me of the best route from Grand Rapids, Mich., to Baraboo, Wis., and Stevens Point.—R. J. Schlesinger.

Grand Rapids to South Bend, Ind., is 118 miles and routes through Cutlerville, Moline, Wayland, Martin, Bradley, Plainwell, Kalamazoo, Almena, Paw Paw, Decatur, Dowagiac, Pokagon, Sumnerville, Niles, South Bend.

South Bend to Chicago can be made in a half a day and the towns are Plainfield, New Carlisle, Rolling Prairie, La Porte, Westville, Valparaiso, Merrillville, Schererville, Highlands, Hessville, Grasselli, Whiting, South Chicago and Bryn Mawr. The Lake Geneva road is through Niles, Wheeling, Half Day, Libertyville, Greys Lake, Volo, McHenry, Richmond, Genoa Junction, and is 68 miles.

To Madison and Baraboo is Delavan, Emerald Grove, Janesville, Edgerton, Staunton, McFarland, Madison, Ashton, Sauk City, Prairie du Sac and Baraboo. There is some sand on the way to Portage, but it is not as bad as from Kilbourn to Portage. Fox Lake Waupun, Brandon, Ripon, Pickett, Oshkosh, Dale, Redfield, Fremont, Weyauwega, Waupaca, Amherst, Stevens Point.

Efficiency of Radiators

Cooling Efficiency of Cellular and Tubular Types of Water Coolers Compared

CHICAGO, ILL.—Editor Motor Age—I have noticed that in spite of the claims of manufacturers of honeycomb radiators, the tubular types still prevail. What is their relative efficiency, and if one type is more efficient than the other, why is the other type of radiator used on high class cars?—H. W. P.

The cellular or honeycomb type is generally accredited with being superior in actual efficiency to those of the tubular type. Three factors enter into the efficiency of radiators of types of equal volume, these being radiating area of both air and water, thickness of the walls, and the radiating properties of materials used in construction. Of two radiators, one of the tubular type and the other of the cellular type, having equal volumes, occupying the same amount of the front area of the car, made of equal thickness of wall, of the same quality of copper or bronze and possessing the same amount of external radiating area, the cellular, if of the standard type, would prove more efficient than the tubular form, because the shape of the water stream is that of a thin wide sheet, practically the entire volume being in contact with the interior radiating surfaces, Fig 1, while in the tubular form, it is in the form of a cylindrical column a smaller proportion of which volume is in contact with the walls of the radiator, although the external radiating surface may be even greater than that of the cellular type.

It is thus seen that all other things being equal, a radiator's efficiency is measured by the extent of its internal or water radiating surface. The efficiency of radiators of different types is usually determined by practical tests and experiments, always considering the correlated factors to efficiency, of manufacturing cost and durability.

The tublar type, if properly designed and adapted, will cool the motor car engine with thorough satisfaction, and as its manufacturing cost is less than that of the cellular, and radiators of this type are less susceptible to damage from objects striking them, they are preferred by many makers to the higher efficiency but more fragile cellular type.

ACCELERATION CAUSES KNOCK

Joplin, Mo.—Editor Motor Age—If, while jogging along a level road, I suddenly open the throttle wide, my motor does not pick up well and develops a sharp spark knock. It is necessary to fully retard the spark until car has gained considerable speed in order to stop the knock. Cylinders are practically clear of carbon and I have gradually opened the air valve on carbureter to the limit without results. Motor is 1910 Rutenber, 4½ by 5; Schebler F carbureter and Bosch magneto.—Subscriber.

This behavior on the part of your motor, if it is peculiar to the conditions you specify, is nothing abnormal, as any motor if too suddenly accelerated will choke up, and with an advanced spark, pound a little. Such a pound is a spark knock and, provided the motor is otherwise performing properly, is to be regarded as a good sign. In regard to your tampering with the air-valve adjustment in an attempt to remedy an inherent and perfectly normal development, you are making a grave mistake. Adjust your carbureter for the best running at all speeds, and leave it alone until you are sure that it has been thrown out of adjustment by tampering, vibration, or a radical change in conditions, atmospheric or operating, that manifests itself in imperfect running of the motor due to imperfect carburetion. Always open your throttle steadily and evenly, avoiding erratic acceleration or throttling. The brilliant get-aways and choke-offs indulged in by some drivers are pleasing to watch, but are a useless strain on the entire mechanism. They are accomplished usually with the spark and throttle in conjunction, and require skill, at the best.

The Readers

Difference in Radiating Efficiency of Cooler Types—Acute Accelleration Produces Pound—Insufficient Data to Give Horsepower Rating—Some Racing Queries

MANY HORSEPOWER QUERIES

Chicago, Ill.—Editor Motor Age—Give the actual horsepower of a 4¾ by 5½ motor at the following speeds: 15, 25, 35, 40, 50, and 60 m.p.h. The gear ratio on the high is 3.5 to 1.

2—Give the crankshaft speed at the above mentioned miles per hour.

3—Which is the highest average speed, Tetzlaff's at Santa Monica or Dawson's at Indianapolis.

4—Give the speed claimed, the weight, and the average fuel mileage of the Stutz coupe.

5—Give the weight, size of motor, and the gear ratio of the special Ford which won the 1912 Algonquin Hill climb.

6—What make of car is Disbrow's Jay-Eye-See?

7—Is Disbrow's Simplex Zip the same car that de Palma drove at the Hawthorne meet in 1911 or is it just another car of the same model?

8—Is there an ordinance in Chicago giving the right hand vehicle the right-of-way when two vehicles meet at right angles at a crossing?—Fleming H. Sherlau.

1—Actual horsepower cannot be computed theoretically, but must be determined by brake, dynamometer or similar tests. The rated horsepower cannot be computed by the aid of the above data, without the number of cylinders and the wheel sizes being given. To enable you to figure this out, when you have all of the data before you, we quote the modified S. A. E. formula, which was published in Motor Age, in the issues of July 25th and August 1st.

$$\text{H. P.} = \frac{D^2 N S R}{15{,}000}$$

Where

D=Bore in inches
S=Stroke in inches
R=Revolutions of crankshaft per minute
N=Number of cylinders

2—To determine the revolutions per minute of your motor when travelling at

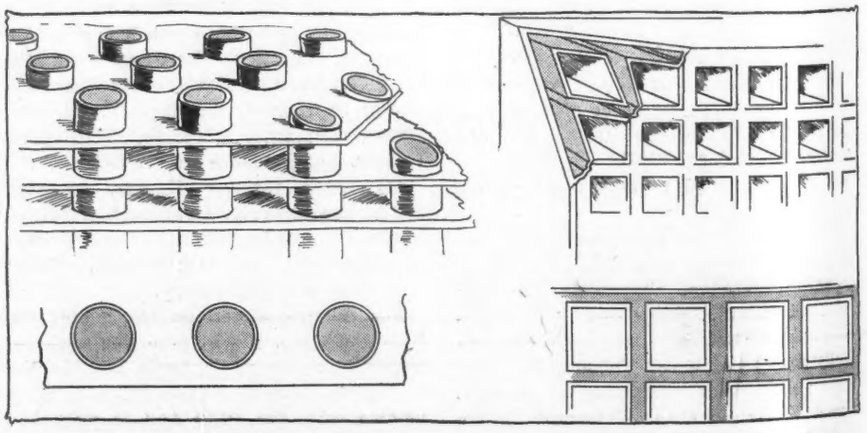


FIG. 1—HOW RADIATOR CONSTRUCTION AFFECTS COOLING EFFECTIVENESS

Clearing House

Dressing Down Viabrator Contacts the Cure for Cylinder Miss —Economy of British Cars Compared with the Home Product—Lighting Dynamo of Cole Car Dissected

certain speeds, with a certain wheel size, and with a gear ratio of 3.5 to 1, reference may be made to the chart on page 49 of Motor Age, issue of May 16. In case you have not this number on file, the following formula will give the same results:

$$R.P.M. = \frac{5{,}280\ C\ S}{R}$$

Where

R.P.M.=Revolutions per minute
C =Circumference of wheel
S =Speed of car
R =Gear ratio

The constant 5,280 is the number of feet in a mile.

C is found by multiplying the wheel diameter by 3.1416.

3—The average speeds of both drivers in their respective races were 78.7 miles per hour.

4—The Stutz car with coupe body weighs 3,200 pounds, is claimed to be capable of 55 miles per hour, and to give 14 to 16 miles per gallon of gasoline.

5—The motor size is 4⅞ by 5½; the cylinders are aluminum castings with steel linings.

6—Disbrow's Jay-Eye-See is a specially constructed car with a Fiat motor.

7—It is the same car.

8—There is no such ordinance on the Chicago statute books.

ENGLISH ECONOMY VS. AMERICAN

Otto, N. Y.—Editor Motor Age—On page 19, issue July 18, 1912, Motor Age, I notice high-speed test of a Napier. Now, is it a fact that any car can get an average of 23.91 miles per gallon of gasoline from a 5,000-pound machine rated at 60 horsepower, running almost 2,000 miles? If they can do it in England, why cannot the manufacturers in this country do it?

I have a model T Ford and on some runs, with four or five in car, can average 25 miles per gallon for 75 to 100 miles.—S. G. Burdick.

The Napier which made the economy record to which you refer was a specially tuned-up and driven car, the run being made under the personal supervision of C. F. Edge, its manufacturer, and over English highways. A good parallel to this is the record made in the recent Quaker City economy run by W. L. W. Jones in an American, in which 22.07 miles were obtained per gallon of gasoline. This latter record was made over ordinary American roads, which are not to be compared with the splendid boulevards of England. It must also be borne in mind that the European cars are made with the idea of gasoline economy paramount, owing to the high price of gasoline. American cars are designed to save weight and economize on first cost, tires and lubricating oil, while English cars to some extent subsidize all of these considerations to the one object of saving gasoline.

Your record of 25 miles to the gallon on your Ford model T is not unusual, as with specially tuned-up cars of this make, which is the only fair basis of comparison with the Napier of which you speak, as high as 35 miles has been gotten from a gallon. It must be remembered that the American car, previously referred to, was driven by an amateur.

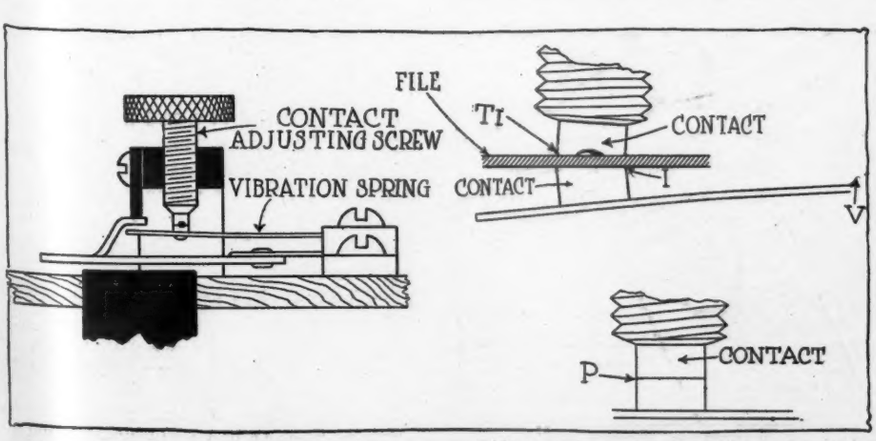


FIG. 2—HOW EXPERT ELIMINATED MISFIRE IN BIG MOTOR

Pits in Platinum Points

Carpenter Finds Small Thin File Balm for Missing Cylinder of Large Motor

SAUK CENTER, MINN.—Editor Motor Age—Today I was called upon to find out why a high-powered roadster would not develop its usual speed and power, and I must confess I was somewhat puzzled to find the real cause of the trouble. I went over the ignition system very carefully and tested each cylinder and found they worked all but cylinder No. 1, which would fire at certain intervals only. When the throttle was opened wide it would work well, but as one would gradually close the throttle this cylinder would miss and snap and crack at a great rate. I tested the plug, which was almost new, porcelain, and substituted a mica with no better results. I then cleaned the timer and found this in good order, and what was most mysterious, the spark coming freely through the plug when it was laid on the cylinder head, which would lead to the belief that there was a leak or cracked porcelain, which I did not find.

I now turned my attention to the coil and adjusted the vibrator forward and back until I was satisfied that this was not the cause of that miss, but finally I came to the conclusion that the points of the platinum contacts were not as they should be, so I took out the offending vibrator spring and with a good glass I found the points on both contacts were badly pitted; in fact, there was a small hole in the contact on the vibrator spring, while the seat had been badly marred by the improper use of the tension spring screw in the adjusting of the vibrator.

With a light hammer I carefully rounded up the contact and seat of the platinum points, carefully finishing the faces with a smooth fine file, and replaced the vibrator and seat. Turning on the current from the battery, storage, I was rewarded by a sharp sputtering from all the cylinders, which soon rounded out with a regular fire from each cylinder, entirely eliminating the vibration which was set up by the missing cylinder. This is the cause, I am most certain, in many cases where a miss is hard to locate, and a regular inspection of the vibrator points on a car using a coil would save a lot of money, vexation and annoyance, and cost but little time and make a far smoother running motor.

Right here I will say that it is strange that the spark would come when on contact, through the plug, but in working under compression in the cylinder, only now and then one could be had. But as soon as the pits were taken out the vibrator worked perfectly.—A. D. Carpenter.

WORK OF LIGHTING GENERATOR

Aberdeen, S. D.—Editor Motor Age—What is the ampere output of the ward-Leonard dynamo used on the Cole this year?

2—These cars are now equipped with 6-volt, 16-candlepower headlights, and 6-volt, 4-candlepower side and tail lamps, all Mazda tungsten lamps. Would it be practical to use 21-candlepower lamps for headlights with the same reflectors and dynamo? The 16-candlepower headlights do not furnish sufficient light for fast travel at night.

3—How many amperes does the Ward Leonard dynamo produce at 10 miles per hour speed on the Cole care with 36-inch wheels?

4—What is the speed of the dynamo, revolutions per minute, when the car is traveling at 10 miles per hour?—Old Reader.

1—The Ward-Leonard lighting dynamo as used on the current Cole models has an output of 10 amperes and 20 volts at 900 revolutions of the engine or 1350 of the generator per minute, corresponding to a car speed of about 20 miles per hour.

2—Yes.

3—The output under these conditions is 7 amperes.

4—At 10 miles per hour, on high gear, the Ward-Leonard dynamo as installed in Cole cars turns at 660 revolutions per minute.

CONCERNING CHURCH STARTER

Westfield, Mass.—Editor Motor Age—Is the self-starter made by the Automatic Motor and Engineering Co. made so that it can be used on any motor, or is it an integral part of a motor they make?

2—What kind of an automatic pump is used on or in connection with the starter made by the Geiszler Storage Battery Co.?

3—The principle of these two starters seems to be the same—what is the material difference?

4—Could Motor Age inform me the number of patents on these two starters or tell me where I could find out?—A Reader.

1—The self-starting feature of the Church motor, manufactured by the Automatic Motor and Engineering Co., is a structural feature of the motor and cannot be applied to any other.

2 and 3—No information obtainable on Geiszler starter.

4—Church patents of the Automatic Motor and Engineering Co. have been pending for 2 years and are not yet issued.

CEMENT INNER LINERS

Edgerton, Wis. — Editor Motor Age — I have two old inner liners that I have used for 2 years in different casings. Can you tell me the best way to put liners in new casings now and make them stay tight so they will not heat up the tubes? The sticking quality has gone to some extent. —A. T. Earle.

Liners should be cemented to casings with any good tire cement, and in the same manner that such cement is usually applied. The inside of the liner should be powdered with French talc before inserting the tube.

Rambler Regulation

Adjustments of Clutch and Steering Gear of Kenosha Car and Hints on Tires and Brakes

RED LODGE, MONT.—Editor Motor Age—Can Motor Age show by illustrations or diagrams how to adjust the steering gear and clutch of the 1912 Rambler Cross-Country five-passenger car?

2—When starting the motor, after it has been at rest for a day or so, we have to crank several times before it will continue to run. It fires several times, then dies. It runs fine after warmed up, but takes considerable coaxing to induce it to continue long enough to warm up. Can Motor Age suggest a remedy?

3—Can any one use a gasoline vulcanizer with success—that is, one that is commonly sold for from $3 to $5?

4—We have several punctures on inner tubes, and as there is no repair shop near us, we would like to repair the tubes and use them again, but some persons have told us that the patches that are cemented on will come off when the tire becomes hot. Is this so, or will the patches that are cemented on give better service than vulcanizing by an inexperienced hand?

5—In descending a long hill, should one use both the foot and emergency brake or just the foot brake?

6—Do the Goodyear people warrant their tires for any length of time or mileage?

7—Does this warrant cover defects or blowouts?

8—How long or how many miles should a motor car be run before refilling the transmission and differential cases with grease?

9—In jacking up a car for the winter, to relieve the tires of air pressure, should the jacks or supports be placed under the springs or on the outside of the wheels?

—Troubled Motorist.

1—The Rambler clutch is of the expanding shoe type, consisting of a main clutch shoe, extending about three - quarters around the interior circumference of the flywheel, and a small cushioning shoe, for the purpose of softening the action of the clutch; which extends around about an eighth of this circumference. These shoes are expanded by means of toggle levers, with adjustable toggle arms. These adjustments consist of nuts which, when turned, to elongate the toggle arms, cause the clutch to engage with more pressure, and vice versa. To make the clutch softer, the smaller clutch may have to be expanded more, as if it does not take hold before the main shoe, the rather sudden engagement of the latter will cause the action to be harsh. On the other hand, if this does engage before, it may be adjusted for too sudden engagement, so that the harshness may be traced to the primary shoe. Fig. 4 shows this clutch.

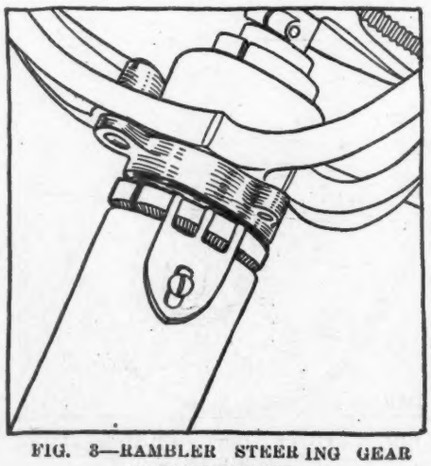


FIG. 3—RAMBLER STEERING GEAR ADJUSTMENT

If the clutch does not let go easily, either of these two members, probably the main shoe, is being expanded too far, with the result that with the pedal fully depressed the clutch is hardly out of engagement. If the clutch slips when pulling hard, the action of the main shoe is too soft. These adjustments must be made at the same time, and are to be judged by the effect produced. The pedal operates these toggle levers by means of two rods, linked to a thrust bearing collar, to which the toggles are connected. To insure free pressure of the spring, these levers should be adjusted so there is just a little play in the clutch pedal, when the clutch is engaged. To insure complete disengagement, the shoes should be free of the wheel before the pedal is fully depressed. These adjustments are made by means of turnbuckles on the connecting rods between the clutch pedal shaft and the thrust bearing collar.

The Rambler steering gear is of the screw-and-nut type, the chief difference between it and others of the same type being in the location of the thrust bearing that takes the thrust from the screw. This is located on the steering column, just below the wheel. It consists of a screw collar which is locked in adjustment by the locking device shown in Fig 3. This consists of a sliding finger-set that engages with milled slots in the adjusting nut, being held so by a set screw, within a slot, which when loosened permits the finger or fork to be slid down out of this engagement, to permit of the adjustment of these members, to take up wear. This is the only adjustment. Turning the nut to the left takes up what play may exist in the thrust.

2—Hard starting in a cold motor is to be expected, but the stopping of the motor, once started, is to be attributed to a lean mixture. With your motor running slow, cut down your low-speed air until the motor begins to slow up, then turn it back a half-turn.

3—These devices are of such recent introduction that Motor Age has not yet had an opportunity to test out their merits. They seem to be finding favor with many users.

4—The practice of cold-patching is quite general, and usually successful. A patch

properly applied should last as long as the tube. Vulcanization, however, is better, as in severe use it will stand more heat than a patch. After standing in the tires for some time or lying in the tool box for some time, the cement of patches sometimes dries out, necessitating a new patch or recementing. A good patch is certainly better than a poor job of vulcanization, but with the acid cure and other cold vulcanizing outfits that are now on the market, there is no reason why any man of ordinary skill should not be able to make a good repair of the latter kind.

5—The safest rule in descending long grades is to use the emergency or hand brake, which can be locked in partial engagement, requiring no further attention, and giving a steady pressure on the drums, much better for the car than the irregular pressure that even the most careful operator would exert on the foot brake. The chief reason for the advisability of this lies, however, in the fact that the term emergency, as applied to the hand brake, is at best a misnomer, as the foot brake is the one reliance of the driver in case of an emergency, when there is no time to reach for a lever and bend forward in the seat, both hands being required to guide the car, then, if ever. For this reason, it is best to use the foot brake sparingly; stopping dead with the hand brake, which is always applied in leaving the car, by careful drivers; and avoiding such strains and excessive wear as the foot brake would be subjected to in long coasts.

6—Goodyear tires are warranted against defects in material or workmanship that may develop in 3,500 miles of running.

7—This warranty covers any trouble resulting from the above defects.

8—This varies with different cars, the average being about 5,000 miles.

9—Preferably between the wheels, as, if placed outside, they consume more space than necessary, and are liable to be knocked over in passing.

GEAR RATIOS AND HORSEPOWER

Baton Rouge, La.—Editor Motor Age—What is the gear ratio of the 1912 and 1913 Rambler cross-country on high?

2—What is the speed of this car?

3—It is rated at 38-horsepower, but what is the horsepower developed by this car?

4—What is the gear ratio of the 1912 Chalmers 36?

5—This car is rated at 36-horsepower, but what is the horsepower developed by this car?—A. J. Lanier.

1—The gear ratio on both is optional, 3½ to 1, or 4 to 1.

2—This car is said to be capable of 55 miles per hour.

3—The rating of 38 horsepower is derived from brake tests at 1,500 R. P. M.

4—The gear ratio in high gear is 3¾ to 1.

5—The rating of 36 horsepower is based on brake tests, at 1,000 R. P. M.

To compare the powers of these motors their tests at equal speeds are requisite.

Peculiar Piston Pound

Bucking Buick Baffles Bewildered Southern Motorist Who Fears Expense of Renewing Parts

TEXARKANA, ARK.—Editor Motor Age—I am driving a model 10 Buick and I am having trouble with the two front cylinders missing on low, running very rough, not knocking but running as if some bearing were loose and rattling around. The noise seems to be in the crankcase, but I have had the lower half taken down and all main and connecting rod bearings drawn up snug; there is no perceptible movement when an iron bar is put under the flywheel and lifted up and down. The only thing left to do is to take off the front two cylinders and look for broken or weak springs or badly working rings. In the event that I find the two cylinders are worn out of true what can I do with the least expense to restore compression? I do not care to go to the expense of having cylinders reground and pistons fitted, neither do I care to buy new cylinders and pistons, etc. Will the fitting of stiff new rings upper and lower restore the compression?

This engine is fitted with a model L Schebler carbureter which gives plenty of gas and which has been recently cleaned and adjusted. If Motor Age can suggest a remedy I would be very willing to follow your suggestions.—X. Y. Z.

1—There are a variety of causes that could be responsible for the noise of which you complain. If you are sure that the bearings, including the wrist pins, are in perfect order, examine the valve action. See that the valve tappets have not too much clearance over the cams. If you find nothing here take off the offending cylinders and examine them for broken or worn piston rings, and see that you have compression in all cylinders. In case any of these parts need replacement, by all means spare no expense in putting in good parts, for you will find that a few new rings or a new piston is far cheaper than a new cylinder, such as you might be forced to put in if a broken ring scored it. If the cylinder is badly worn out of round or scored, either replace it or regrind it, according to the cost and general promise of life. If the latter is done, new piston rings will be needed, and probably in a much used engine, new pistons. Extra heavy rings, if properly applied, should work very satisfactorily, if nothing worse than natural and legitimate wear has taken place in the cylinders or on the rings and pistons. Nothing but a thorough inspection can determine this, however, and Motor Age can only suggest that whatever course you pursue, you employ the services of a competent expert, if you do not feel yourself sufficiently adept; and if the car is worth anything at all strive for permanence in such repairs as you make.

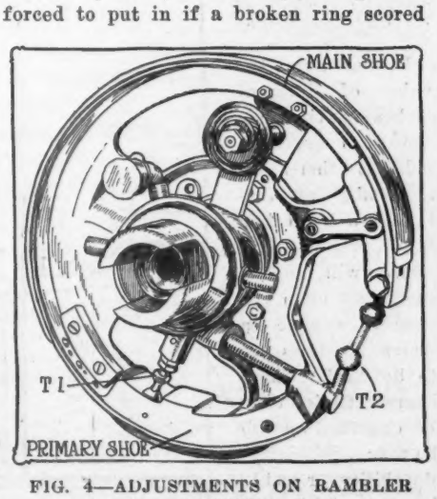


FIG. 4—ADJUSTMENTS ON RAMBLER CLUTCH

GARFORD PERFORMANCE

San Francisco, Cal—Editor Motor Age—1—What is the weight of the Garford Six?

2—How many miles per gallon will it travel?

3—What is its best speed?

4—What was the size of the engine used in the Thomas Seventy?—G. W. Fuller.

1—The chassis weighs 3,050 pounds, and the seven passenger touring car, 4,200 pounds.

2—About 9 miles to the gallon.

3—About 65 miles per hour.

4—Six cylinder, 5½ by 5½ inches bore and stroke.

BEST ECONOMY AT MODERATE SPEEDS

Virginia, Ill.—Editor Motor Age—1. What should be the condition of the compression chamber in a motor when working to best advantage? Should the piston head and compression space be dry and sooty, or in an oily condition?

2. Will a car consume more or less gasoline running at a speed of 60 miles per hour, or at 20 miles per hour going the same distance?—G. W. Rexroat.

1. By all means the combustion chamber of an internal combustion engine should be well lubricated. Never let carbon, or in the above phrasing, soot, remain in it. As much oil as can be used should be in the cylinder at all times. The maximum being the greatest amount possible without smoking.

2. This question is not specific. Provided the speeds of 60 and 20 miles per hour are both made on the same gear, that the spark in both cases is carried reasonably advanced, that the car in both cases is correctly adjusted, and that the distances covered are over the same or similar routes, a car going under these conditions at 20 miles per hour will show more fuel economy than if it were going at 60 miles per hour. A speed of about 30 miles per hour gives the best economy on the average car with good road conditions.

The type, adjustment and adaptability of the carbureter to the motor are features that must be considered in this, as some carbureters are made for speed without regard to economy, and vici versa.

Observations on Motor Truck Tires

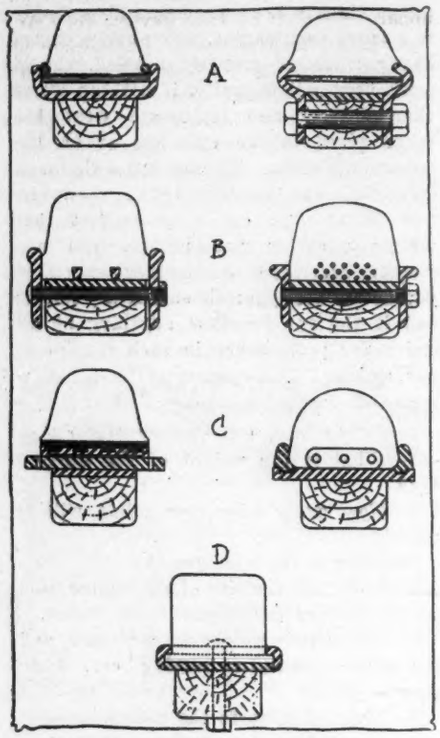


FIG. 1—TYPES OF TIRES

EDITOR'S NOTE.—The following paper on "Some Observations on Tires for Commercial Vehicles" was presented to the Philadelphia branch of the Society of Automobile Engineers by F. E. Whitney.

EVER since the dawn of civilization when ancient man was forced to stand in his chariot for the sake of comfort, man has had before him the problem of devising means of increasing his comfort by reducing the shocks and jolts transmitted to his anatomy from bumps and inequalities of the road. The gradual evolution of the power vehicle, from the simplest kind of a cart with the crude wheels tired with skins and later with bronze and then with iron, progress has been made in small steps until we are brought today to the self-propelled vehicle in its well-nigh perfected state.

Question an Economic One

The question of tires has from the first been an economic one, the ancient using the best means available to prevent his wheels falling apart, as is the case today. The tires for self-propelled vehicles, or, to narrow it further, for motor trucks, put before us a problem which is one of the most important in the industry, and which, up to only a short time since, has retarded its rapid advancement. The problem before the builder of horse-drawn vehicles is simply what material will give the longest service at the lowest cost, and the solution has been plain steel band securely attached to the wood wheel. The motor car builder immediately finds his tire question a much harder problem to solve. In the case of the ancestors of the modern truck, the steam roller and traction engine, which move at very slow speeds, steel tires were amply sufficient for the requirements, but when it was attempted to increase the speed and use motor vehicles for carrying loads, it was very soon learned that something was needed at the surface of the road to absorb some of the vibration and at the same time furnish sufficient traction without cutting up the road. So, from trials with steel, wood, leather and everything else imaginable, the use of rubber has developed into a necessity. The success of the bicycle was assured the day pneumatic tires were made successful. So with the commercial motor vehicle, its position as a factor in business was established as soon as a tire that had the necessary qualifications was produced.

The object of this paper is simply to bring out some interesting points noted in studying the various types of truck tires on the market, the effect of load upon them and some rather peculiar characteristics. As my experiments have been confined to vehicles traveling at speeds below 20 miles per hour, we have not considered pneumatic tires as entering the field. The various makes of tires now on the market may be divided into four distinct types as shown on Fig. 1.

Type A—Side Wire — Uniform compound throughout attached to wheel by means of cross wires embedded in rubber at base and secured to wheel by side wire or side flanges. Characteristic makes of this type—Firestone, Swinehart.

Type B—Wire Base—Uniform compound having several wires embedded in rubber at base running around wheel and secured to wheel by press fit on band and side flanges. Characteristic makes of this type—Diamond, Kelly-Springfield, Hartford.

Type C—Hard Rubber Base—Soft rubber tread, hard rubber base vulcanized to steel bands and secured to wheel by press fit and side flanges or T bolts. Characteristic makes of this type—Gibney, Goodrich, Polack, Goodyear.

Type D — Block — Separate blocks secured by cross or side wire and metal cages over blocks bolted through felloe. Characteristic makes of this type-Kelly-Springfield and others.

In considering the value of different makes of tires for use on commercial vehicles there are a number of features to be taken into consideration which will depend somewhat upon the type of vehicle on which the tires are to be used. These characteristics can be classified as follows: Efficiency, durability, resiliency, weight, cost.

In determining the value of the different characteristics to the truck manufacturer I have arranged these in the above order as representing the order of their importance to the manufacturers of electric vehicles. On account of the different nature of other types of vehicles the relative importance of the different characteristics of the tire is frequently placed in the following order: Durability, cost, weight, resiliency, efficiency.

In making observations a number of tests have been made on various makes of tires, the size used being 3 inches by 36 inches. This particular size was selected because of ease in handling, loading, etc. The standard load rating of this tire is 950 pounds, but tests were carried up to 1,500.

Road Surface Resistance

In rolling a wheel along the road over any surface there is a resistance to rolling depending on road surface and type of tire, which varies all the way from 3 pounds per ton with true steel wheels rolling on heavy clean rail up to 200 pounds per ton in ordinary wagon wheels through sand. The best authorities give the following figures:

Steel-tired wheels on steel rail	3 to 5 lbs.
Pneumatic-tired wheels on asphalt pavement	15 to 35 lbs.
Solid-tired wheels	20 to 40 lbs.
Steel-tired wheels on average road, about	50 lbs.

The most efficient rubber tire is naturally the tire that will roll along and offer the least resistance to rolling. In rolling over the relatively hard road surfaces the softness of the rubber allows it to spread, giving more surface in contact with the road; as against this the steel tire retains its shape, making an indentation in the road as it rolls along. As the composition of the road is not as efficient a spring as

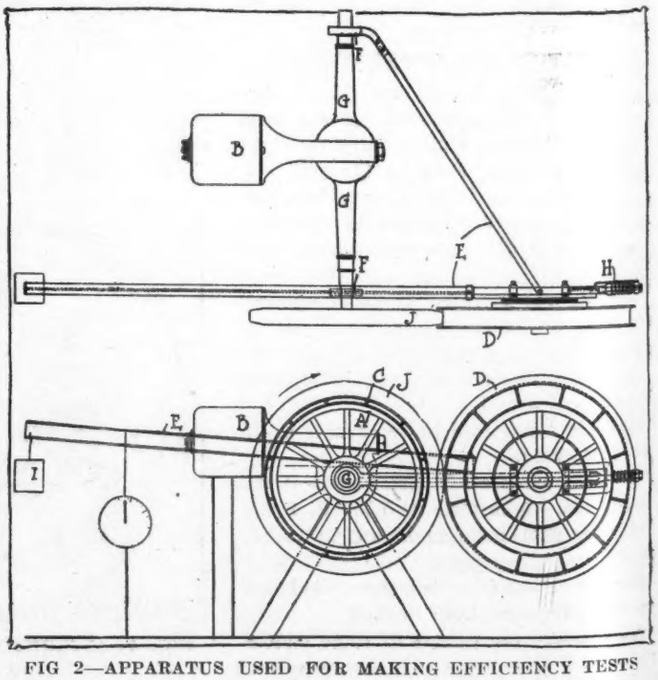


FIG 2—APPARATUS USED FOR MAKING EFFICIENCY TESTS

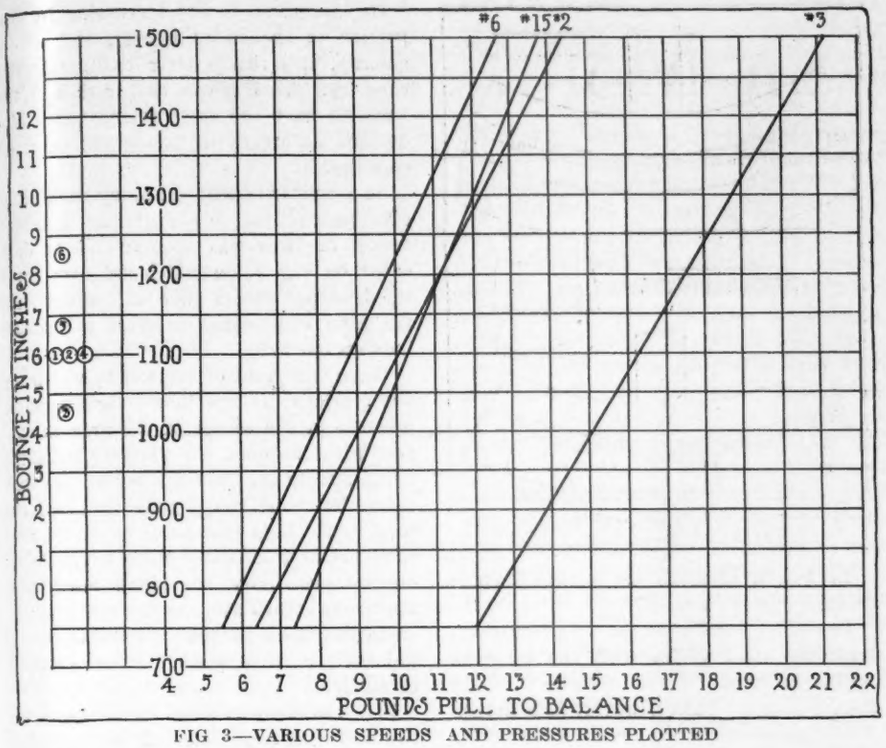


FIG 3—VARIOUS SPEEDS AND PRESSURES PLOTTED

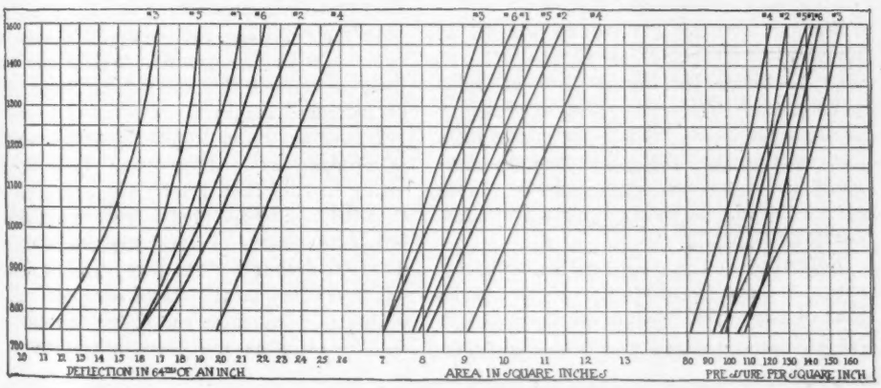


FIG. 4—TIRE DEFLECTORS. FIG. 5—PRESSURE PLOTTED AGAINST POUNDS. FIG. 6—PRESSURE PER SQUARE INCH AGAINST POUNDS

the rubber tire, the road resistance is naturally higher.

In making tests on trucks with different makes of rubber tires results have been secured where the total resistance has run as low as 25 pounds per ton and as high as 60, all other conditions remaining the same except the tire. This is simply due to a variation in the compound of the rubber, the low results being with a very high quality of rubber, whereas the high results were due to an inferior compound. Of this the loss in transmission amounts to approximately 3 pounds per ton, friction and windage 5 pounds per ton, the remainder being in the tires.

Methods of Test

In order to test for efficiency we make use of several methods:

First—By allowing the vehicle to coast down a grade and determine the distance it will run, this being repeated with different makes of tires. The more efficient tire will naturally coast further.

Second—Run the vehicle over a measured course and with electric instrument and stop watch determine the power consumed per mile per hour, this being repeated with different makes of tires.

Third—The more accurate test has been with the use of a dynamometer on which the tire to be tested is mounted and rolled against a plain steel band. The resistance to rolling is determined in pounds at various speeds and pressures.

Fourth—The fourth and very simple method is to follow the system used in the Shore scleroscope for testing steel, which simply consists in dropping a piece of hard material on the tire from a definite height and measuring the height it will rebound, the efficiency of various tires comparing with the height of rebound.

Fig. 2 shows in plan and elevation an apparatus which we have devised for making these efficiency tests. It consists of the rear construction of one of our worm-driven light delivery wagons. By means of a special driving shaft the differential is locked so that a wheel mounted on one end of the axle at A will be driven from the motor B in the same manner as the vehicle operating on the road. This wheel is made small enough so that a 36-inch tire mounted on its steel band will slip over the outside. The rim of this wheel is fitted with a number of set screws C, so that the tire can be readily centered and secured in position, after which it is securely wedged. Steel-tired wheel D, mounted on annular bearings, is carried by frame E so mounted that it swings readily on the annular bearings F of the axle G. The wheel D is mounted so that it can be moved in or out and it can be pressed against the wheel to be tested by means of the coil spring H. The wheel D with its supporting frame E is counterbalanced by the weight I. It will be seen that by revolving the wheel A in the direction indicated by the arrow with no pressure between the tire to be tested J and the wheel D, there will be no tendency to rotate the whole apparatus about the center of the axle G. When, however, pressure is applied, any resistance or drag at the surface of the tire J will be resolved into a tendency of the whole system to rotate about G and this is determined in pounds pull by means of the spring balance K. In addition to the apparatus indicated the wheel is fitted with a speedometer so that tests at different speeds can be made. In this manner a range of tests has been made at varying speeds and pressures and the results plotted in curves as shown on Fig. 3.

Tire Losses Vary With Load

It will be noted that all of the curves are practically straight lines, showing that the tire loss varies directly with the load. By referring to curve 3 and curve 6 it will be noted that at 1,250 pounds the drag on tire 6 is 3-10 pound, as against curve 3 showing a drag of 18 pounds, which represents the relative efficiency of the tires.

As a direct comparison with the above method of test, the bounce in inches of the same tires has been plotted, as shown at the left side of Fig. 3, from which it will be noted that tire 6 shows a bounce of

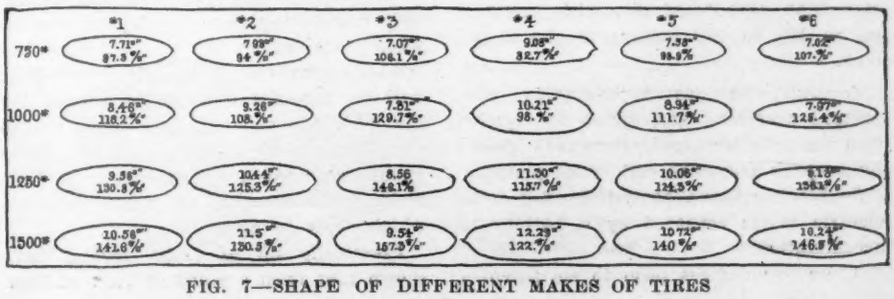


FIG. 7—SHAPE OF DIFFERENT MAKES OF TIRES

8½ as against 4½ for tire 3, showing about the same relative efficiency with the different method of test.

As indicating the effect on the mileage secured from one charge of the battery in an electric truck with the extremes as indicated by tires 3 and 6, a vehicle equipped with tire 6 would cover, say, 50 miles on one charge of the battery, whereas a vehicle equipped with tire 3, over the same route, and using the same battery equipment would be able to cover only 30 to 35 miles.

Cushion Effect

The amount of cushion which the tire interposes between the wheel and the road is an important factor in the value of the tire as measuring the amount of injurious vibration and shocks which are absorbed. In order to determine this effect tires were given various loads and observations taken of the compression of the tire; also of the area in contact with the road. From these observations curves have been plotted showing the load characteristics of various makes of tires and also the contact with the road and the load per square inch of the surface in contact.

Fig. 4 shows a series of curves in which the deflection of the tire in sixty-fourths of an inch is plotted against load in pounds. This test is made by pressing the tire between two parallel surfaces and simply measuring the compression in inches. It will be noted that on curve 3 with a load of 1,250 pounds a compression of 16/64 is shown, as against 24/64 on curve 4. In other words, on a bump tire 4 will compress 50 per cent more than tire 3, and, consequently, absorb proportionately more vibration.

In Fig. 5 pressure is plotted against pounds.

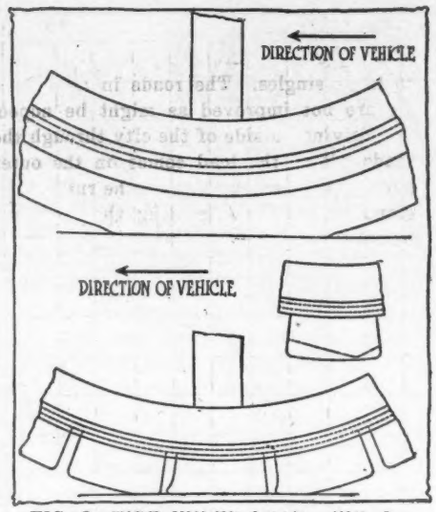


FIG. 8—TIRE UNDER LOAD. FIG. 9—EFFECT WITH BLOCK TIRES

In Fig. 6 pressure per square inch is plotted against pounds.

It will be noted that the area in contact with the road varies with the different makes of tires from 8 6/10 to 11 3/10 square inches. This, however, does not indicate much unless the pressure per square inch is taken into consideration.

Pneumatic tires are usually worked at about 75 to 90 pounds per square inch. It will be noted by Fig. 6 that at 1,250 pounds solid tires are working at pressures of from 115 to 145 pounds per square inch. The wear on the solid rubber and the service it has to perform are considerably more severe than in the case of pneumatic tires.

Carrying Capacity

Referring to Fig. 4, it will be noted by curve 4 from the direction of the curve that at even 1,500 pounds the tire has not reached its full capacity, whereas on curve 3 the deflection is not increasing in proportion to the added weight, and, consequently, this tire is close to its carrying capacity. This shows that although the tires all have the same rating there is a decided difference in the actual carrying capacity.

As a matter of interest along with other observations the shape of the different makes of tires was observed as is indicated on Fig. 7, on which are also noted the load per square inch at contact with the road and pounds pressure per square inch on the tire.

There is a point of interest to which my observations did not reach, the maximum pressure at the center of the area in contact with the road, the pressure indicated being simply the pressure per square inch calculated from the pounds load and the total area. It is reasonable to expect that some of these indicated figures will be increased materially, the result being that the tire is etched away in the center of the tread and has a tendency to flatten out on the surface; this is what actually occurs in service.

Fig. 8 is made to show the shape of the tire under extreme load. It will be noted that there is a slight wave in the rubber at both the front and the back of the area of contact with the ground. When the vehicle is moving this wave is in front and of increased height.

I have shown in Fig. 9 the effect which is obtained with block tires. It is interesting to note that usually the first idea is that the heel of the blocks is worn out first, but, as a matter of fact, the toe is worn more on account of its creeping out from under the load as the wheel revolves. The dotted line indicates the shape the blocks assume after having been in service.

ENGLISH STARTER EXPERIMENTS

LONDON, Eng.—Editor Motor Age—In view of the interest taken in self-starting devices, I have been carrying out a series of personal trials with the various types now prevalent. There are five principal types.

1—Compressed air, with a compressor, air tank, distributor valve, and all of the other necessary adjuncts, made as part and parcel of the car when designed, with pressure up to 500 pounds to the square inch.

2—Spring types, which automatically rewind, once the motor is started.

3—Compressed air types in combination with carbureted air, with pressures up to 100 to 150 pounds to the square inch.

4—Acetylene gas types using compressed acetylene gas, which is injected into the cylinders, and afterwards ignited by a spark from the coil or magneto.

5—Electric types, consisting of a small electric motor actuated by a battery of accumulators.

These five devices seem to me to cover

Manufacturers' Communications

those which may be considered in the practical way today. I find all have disadvantages, some serious, and some less so. None of them would give satisfaction after a year's use, and all of them require a considerable amount of care and intelligence to keep them working properly, and as a whole, speaking from personal experience, I find their disadvantages to be infinitely greater than their advantages, but one cannot help recognizing that the day must come when engines will be automatically started from the seat with certainty, without material expense or weight being added to the car, and without such complications as at present exist, which almost requires a trained man to keep them in order with the little incidents which seem to occur.

Practically all of these devices have shown that from a point of view of demonstration, they will start a car certainly and successfully hundreds of times a day, and keep on doing it, I daresay for many days on end, but that is quite another story to starting the car when it has been standing for some time, and is hard to start with the starting crank. It is under these circumstances that the starter is most wanted, and behaves the worst.

Now to deal with the disadvantages of the various types: The compressed air type has the disadvantages of excessive weight and expense, the workmanship has to be perfect, and even then requires a skilled person to keep the installation in order. The spring type is on the face of it the simplest to operate, and very certain in action when the engine is able to turn over, but once trouble does start, and owing to its complication, it is a certainty that it will, only a skilled mechanic will be able to put it in order. The compressed carbureted air type is excellent in many ways; the pressure is not high, the installation is not so expensive as others, but its disadvantages are that it requires a coil or special starting magneto to start, and as the engine

does not always stop in the sparking position, so that in a certain percentage of times it fails. I look on the acetylene type only as a passing phase, as compressed acetylene, I think is illegal in England, and there is no question but that it is dangerous. It also has the disadvantages of the compressed carbureted air type. Electric starters, on their face seem an ideal method of turning the engine over. But to turn over a big engine that has been standing all night in the cold requires a large amount of power, and the installation, in common with the others is heavy, and if installed in the best way undoubtedly would be expensive. I think it is a reasonable proposition for small cars, provided the cost is not objected to, but when one remembers the trouble attendant upon the use of storage accumulators, it can easily be realized what a state this mechanism would be after twelve months of use.

At present none of the devices which I have tried, and am trying, appeal to me from the private user's point of view, but anyone who is experimentally inclined will always be able to get the latest form of self-starter fitted to Napier cars, and he can feel it he does have troubles that he is doing good work for motoring as a whole because the self-starter will come, and it wants some private users to start experimenting so that every difficulty may be more rapidly found out than is possible under present circumstances with relatively few of us experimenting with these devices. At present I must say my own motoring would be infinitely more pleasant if I did not find it desirable and necessary from an experimental point of view to have different forms of self-starters fitted to my cars. Therefore, every firm which fits self-starters we look upon as doing good experimental work for motoring, and to those purchasers who buy them and put up with their vagaries, which certainly will occur sooner or later, I think a great debt of thanks is due from the motoring community as a whole.—S. F. Edge.

AGAINST DUAL TIRES

Indianapolis, Ind.—Editor Motor Age—After making some careful investigations and observations, I am fully of the belief that dual tires are not practical. Further, the origin of this type of tire was entirely due to the fact that early tire makers did not have the proper equipment for making single tires in sizes to take care of the roads. As you know, under average driving conditions, when the truck is not used in the sections most improved, the load is often carried by one tire or the other, so that you are really getting advantage only of the single smaller tire. If this is true, the load is being carried on one side of the wheel, and not so evenly distributed along the wheels as where a large single tire is used.

I can cite a number of cases in the east and some which have come under my notice here in the vicinity of Indianapolis, where truck users have found it necessary to change their tire equipment from dual to large singles. The roads in this locality are not improved as might be hoped, and driving outside of the city through the roads, all of the load comes on the outer tires, as they extend beyond the ruts of the standard tread. Admitting that the tire would be somewhat damaged even if large singles were used, this wear would be more evenly distributed over the entire tire, and possibly the cutting be from both edges, which would result in greater mileage.

All of the arguments which have been given me by the tire people in favor of the dual tire are of no consequence, in comparison with the advantages of the large single. So far as the manufacturer of tires or trucks adopting the proper standard in tire sizes, this would be impossible, unless in a case where careful study was made of conditions. In some cities tires will give a mileage up to 10,000 or 12,000, while in other localities the same car carrying about the same load will give only a few thousand miles. I cannot give you any solution for this problem, as it would be quite a hardship on the manufacturer of trucks should he endeavor to solve each individual problem, as it would necessitate the use of a great variety of sizes in wheels.—C. H. Wallerick, manager motor car department, General Indicator and Mfg. Co.

FUNCTIONS OF BREAKER STRIP

Akron, O.—Editor Motor Age—There are still occasional tire users who do not fully understand the function and purpose of the breaker strip, which lies along the tread of the Goodyear tire concealed by the tough rubber of the tread. The explanations occasionally given for the presence of the breaker strip are entertaining, to say the least. The breaker strip is put in a tire to take the shocks, which obstructions in the road are liable to give to a tire, before they can reach the organic part of the tire. It plays no part in the strength or efficiency of casing, but is simply an armor belt around the outside of the tire, to protect it from injury.

The body of the tire, to give the best results, is made of fairly closely-woven fabric, placed at an angle of 45 degrees. The tread rubber, to give the best wearing qualities, is made thick and tough, and while in service exerts a drag on the fabric, tending to pull it loose. The breaker strip should be put in with the threads running around the circumference of the tire, instead of at an angle of 45 degrees, as this more effectively takes up the shocks without transferring them to the carcass, and better resists the drag on the rubber pulling it away from the tire fabric.

When sharp stones or glass cut the tread rubber, in many cases the abrasion is stopped at the breaker strip, preventing the water and dirt getting down to the main fabric, thereby preventing the tire being water-soaked or sand-blistered to quite an extent. As the breaker strip is the nearest fabric to the road, it receives all the cuts, water, dirt and sand, and should be made, so far as possible, to resist damage caused by them. For this reason, we wish an open fabric which can be more effectively united to the rubber. On the other hand, we wish a closely-twisted yarn, tightly woven, to avoid becoming spongy when water-soaked, thereby letting go from the rubber. We believe that our rivet fabric is the best compromise between these two qualities, as it is made from closely twisted yarn, tightly woven, to make it as waterproof as possible, but leaving large holes at intervals, making a fabric which is more closely united to the rubber than any ordinary loose-woven fabrics, and at the same time time it is more waterproof after the tread has been cut.

Always bear in mind when you have breaker strip trouble that undoubtedly this has saved the tire from much more serious injury at a much more vital point in its construction. To obtain the best results from breaker strips, there should be a cushion of rubber between the breaker strip and the main fabric of the tire.—P. W. Litchfield, factory manager Goodyear Tire and Rubber Co.

ABUSING TRUCK TIRES

Detroit, Mich.—Editor Motor Age—The question of abuse of motor truck tires is nation wide. We could cite examples of overloading on every truck we sell. We have built a truck on which the name plate is 1 ton with 50 per cent overload. Every one is running overload, some running 2 tons. We are advising our customers to equip with heavier tires, 3½-inch front and 5-inch rear with an extra charge, which is meeting with very good favor.

As to over-speeding, we found it impossible to run a truck satisfactorily prior to equipping with governors. We equipped with governors the last year and find that our troubles have been cut in half. We are having no engine trouble, less tire troubles and less trouble all through the truck.

One of the greatest truck troubles is in the matter of the driver who does not try to steer clear of broken bottles and glass and does not try to avoid obstructions that would damage tires very much. His carelessness in this matter often results in considerable tire trouble.—W. L. Pulcher, general manager Federal Motor Truck Co.

The Motor Car Repair Shop

Drilling Piston Drains

ONE of the causes of excess oil in the cylinders that sometimes gives motorists a great deal of concern is the slipping of the lubricant past the piston rings. The usual course of procedure in this case is to fit new rings or pistons. This, however, involves considerable expense and often bothersome delay in getting the repair parts, and most owners are loth indeed to discard a piston or set of rings when the compression is good, and their condition, other than a slight undersize, is still good. A better way to prevent an excess of lubrication, after the oil level has been lowered in the crankcase as much as is safe, is to drill a series of holes in the piston, to permit the excess of oil that collects on the cylinder walls to drain back through the inside of the piston, where it will not be caught up on the next stroke and carried back again to the upper portion of the cylinder.

The operation, which is very simple, is shown in the accompanying illustration. The size and number of holes to be drilled in a piston to provide a drain for excess oil must depend entirely upon the amount of excess which they are expected to conduct. They must not be made too large or too numerous, especially near the wrist pin, as to do so would weaken the piston, and might drain too much oil.

Where there are from four to six pistons, in each of which from eight to sixteen holes are to be drilled, it will probably be advisable to construct a good clamp, to be secured to the drill-press table, for convenience and to prevent breakage of the drill, by accidental slipping of the piston beneath it. Such a clamp is shown in the illustration, being made of straight grained ½-inch soft wood. The base is made in three pieces, the uprights cut with V-shaped grooves, and the base screwed thereto. A clamp lever is linked to one of the uprights by means of two iron straps, bolted through to each piece. The lever may be shaped in the form of a handle for comfort, the longer it is made the better. The clamp surfaces are best lined with leather, cloth or other fabric, to make the grip sure.

This is clamped to the drill-press table in the usual manner, and the piston placed therein. The clamp should be on the top portion of the piston, to provide ample clearance for the drill and chuck. A ¼-inch twist drill is about the right size. The holes should be drilled on the spiral plan, thus providing an outlet for excess oil on all parts of the cylinder walls, and at the same time conducting the oil from hole to hole in a downward

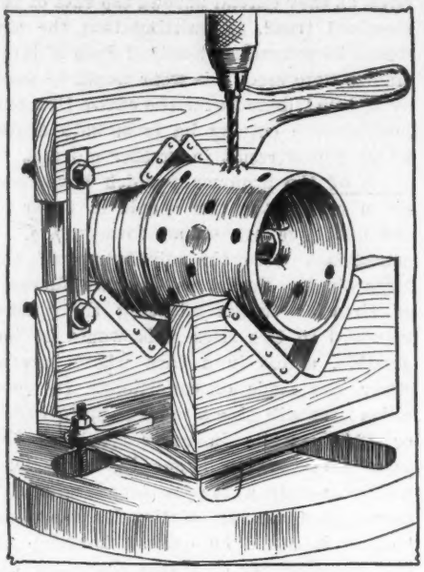


FIG 1—CLAMP TO HOLD PISTONS UNDER DRILL WHILE BORING OIL DRAINS

stream, to drip back readily into the crank case. To insure against overdoing this draining provision, it is perhaps advisable to make the first attempt conservatively, enlarging the size of, or increasing the number of holes later, if necessary.

Care must be exercised, in laying out the holes to avoid having any of the holes over the wrist pin, or too close to its bearings. A good way to plot the holes in this manner safely is to rub the piston with oil, the dirtier the better, and roll it once over in a piece of paper. This will give the development of the surface, and the holes may be much more easily plotted on the flat surface on the piston itself. On the flat plan, the holes can be laid out in straight lines, the plan cut and tied around the piston, and all the holes located at once by marking through the paper with a center-punch.

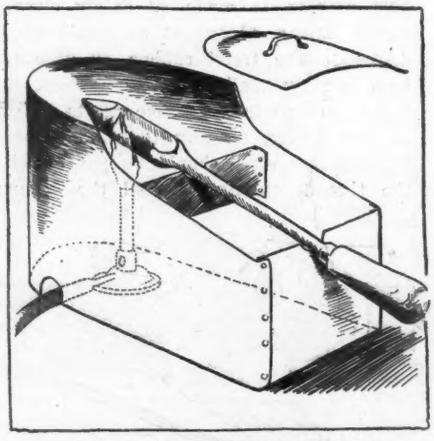


FIG 2—HEAT-RETAINING SHIELD

Simple Soldering Shield

AMONG the little things that help to expedite work by saving time may be mentioned the shield used for protecting the gas flame by which the soldering iron is heated in one of Chicago's repair shops. It is illustrated in Fig. —, and, as will be seen, serves the double purpose of affording protection to the flame from blasts of wind or drafts, and at the same time serves as a rest for the iron.

This shield is constructed of sheet iron, preferably galvanized, and can be made in a short time in almost any shop. It consists of three pieces, the main body of the shield and the two partitions. The main portion is a single sheet about 36 inches long and 12 inches high, cut down to about 9 inches width for about one-third of the way from each end, and bent in a semi-circle at its center. The outer partition is about 8 inches' square, and the inner one about 9 inches each way. The edges of the partitions are turned over and riveted to the main portion. The partitions cannot be soldered, as the heat may melt the solder, particularly at the connections of the inner partition. The exact dimensions of the shield will depend somewhat upon the height of the gas burner employed, but those given should serve the purpose in most instances and such variances as may be deemed necessary can be made from these as a working standard.

Where, as in most shops, a blow torch is used to heat the soldering iron, such an arrangement as that described will result in somewhat quicker heats, for it keeps the heat from being carried away from the iron by air circulation and to a certain extent concentrates the heat of the flame upon the iron by reflection. It is well to cut semicircular notches in the upper edge of the partitions to hold the shank of the iron. If desired, the heating can be hastened still more by placing the lid shown in the illustration over the shield.

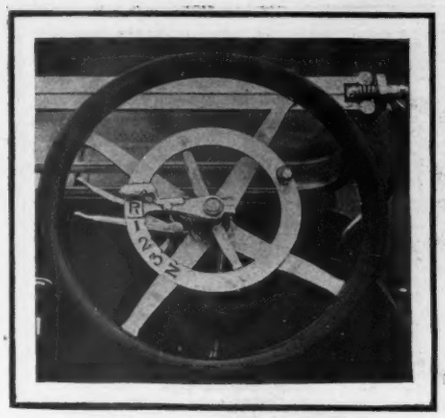
Such a hood will be found to radiate considerable heat, and for this reason, it is well to screw it to an asbestos covered board, or to rivet it to a piece of metal with short legs, to prevent burning the bench. A bunsen burner may be secured permanently to this base, thus saving much annoyance from its shifting about within the shield. If a blow-torch is used, the shield may be mounted on legs long enough to raise it to the height of the torch, with an open bottom over the burner. The open bottom will permit of a draught, and as heat rises, will involve no loss of heat.

Gray Automatic Change-Gear Control

DIFFICULTIES of gearshifting have been removed by a device developed by Edward E. Gray of Plano, Ill., who, by the way, is the son of the famous inventor, Elisha Gray.

Instead of the usual handlever, operating the shifter rods of the gearset, this device uses a pneumatic selector which operates these rods as directed by a small controller wheel on top of the steering wheel. This controller is mounted on a stationary pillar disposed within the steering column, and is marked with the four speeds with a netural at either end. A stationary arm over the wheel indicates the gear by a square aperture, through which the marks are read, and above which a miniature electric lamp is placed to illuminate it at night. The action of the selector is governed by the clutch pedal, which is connected wtih an air distributor valve, constituting part of the selector assembly. Air is taken from a storage tank, supplied by an air pump driven by the engine. The gearshift lever and quadrant is dispensed with.

Referring to Fig. 2, the complete installation is shown. At C is the controller, as shown in Fig. 1, being connected by a shaft internal of the steering column through bevel gears and a shaft to the selector at S. This selector is mounted on the front of the gearset case, G, and connected to the clutch pedal arm by the rod R, which actuates valve, V. At the right of the figure the selector mechanism is shown in detail section. At S S are shown the shifter rods of the gearset, which are cut to form racks. At I I are shown idler racks, which are differentially geared to the lower shifter racks by means of the gear-pinions, G G. At the extremities of all four racks are slots, in which the selector finger engages as revolved. This selector finger is integral with the piston rod, PR, the piston, P, and the controller long pinion LP. This assembly revolves within the stationary cylinder C, as



CONTROLLER SET FOR REVERSE

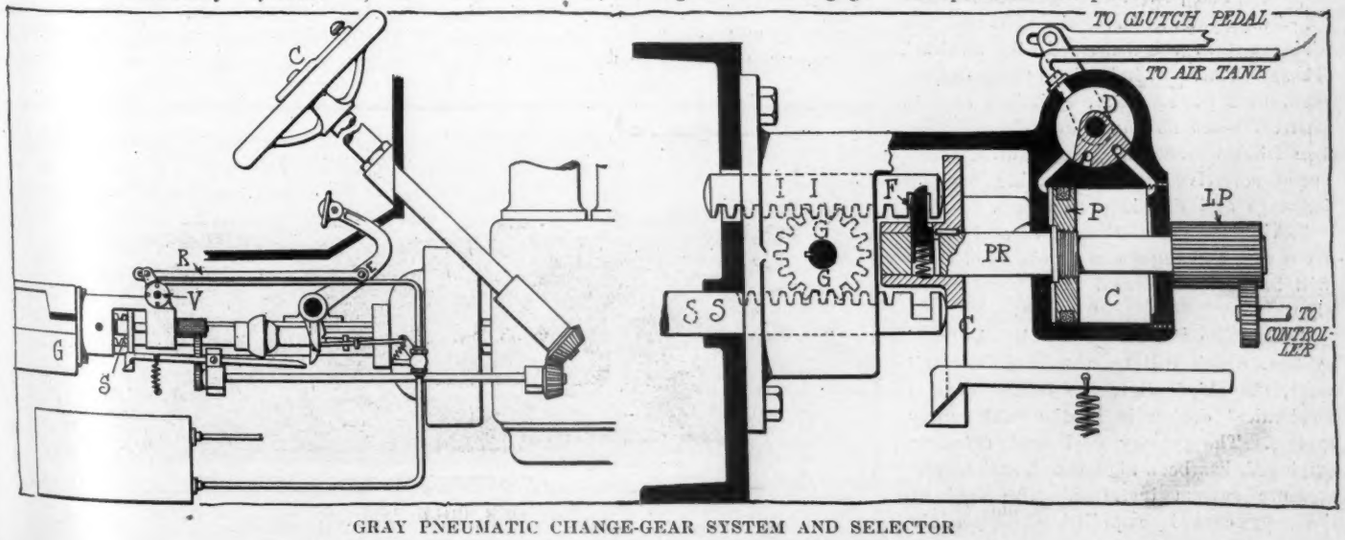
directed by the gearing from the steering wheel controller. The purpose of the idler racks is to transmit a pushing motion to the shifter rods, when drawn forward by the selector finger on the forward or engaging stroke of the piston, to correspond with the forward slots of the ordinary H-plate system. The reverse action, pulling the shifter rods forward, is accomplished by the direct engagement of the selector finger with the shifter rod slots.

At D is located the air distributor, which is controlled by the clutch position. With the clutch engaged this valve is closed; when the clutch is just disengaged, the valve is in the position shown, admitting air behind the piston, and forcing it back. At C is the neutral collar, which is integral with the piston rod PR, and which on its back stroke throws the forward rod back even with the rest, which draws any engaged gear out, producing neutral. A further depression of the pedal closes this port, and the valve registers with the opposite one, forcing the piston forward, the finger drawing the rod selected by the position of the controller forward engaging that gear. When the controller is set at netural, the finger does not engage any of the gears. The selector finger is in the form of a latch, so that when the controller is moved, when in gear, it is turned out into the adjacent space, engaging with the indicated rod, when the gears are thrown into neutral by the above described valve action, by a latch or ratchet action.

A pressure of 15 pounds is required as a minimum to operate the device, 40 pounds being recommended. Very little air is required to operate it, pressure being the prime requisite. As the manual connections consist of only a rod connected to the clutch pedal arm, and a small mechanical stop to prevent release into neutral on the engaging stroke of the clutch pedal, no appreciable extra pressure is required in its operation.

With these controls it is possible to accomplish a change of gear in a fraction of the time required by even the most skillful operator, using the usual method. No more effort is required to change gears than to operate an electric, progression through the gears for quick getaway, as required in traffic; may be made silently, and as rapidly as the clutch pedal can be depressed; the controller may be moved to a lower gear, on ascending a grade, ready to shift at the crucial moment, by a simple depression of the pedal. Neutral may be reached with the controller in any speed, by depressing the pedal half way, thus making it possible in slow running in traffic to change from neutral to first or vice versa by manipulation of the pedal alone; and finally, because of the correct order of precedence in gear shifting, damage to the gears is impossible, except through to sudden application of the clutch or wrong selection of gears, which are, of course, external causes.

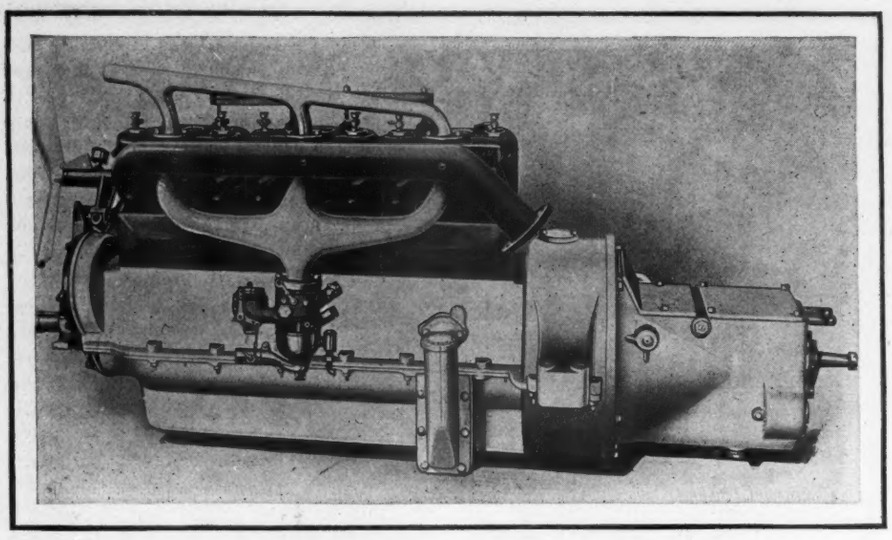
A car was equipped with this appliance a year ago, having since been run with it for 10,000 miles, without a change-gear lever, or other control than that afforded by the device. In a test by Motor Age, its operation was perfect.



GRAY PNEUMATIC CHANGE-GEAR SYSTEM AND SELECTOR

Six-Cylinder Added by Cole Company

Three Chassis Put Out by the Indianapolis Concern for 1913



LEFT SIDE OF SIX-CYLINDER COLE MOTOR

THERE are two noteworthy features in the Cole line for 1913 known as series 8. The chief of these is the production of a six-cylinder car and the other is the adoption of the Delco combined system of electric lighting, starting and ignition. Three chassis models comprise the series for next year. These are known as the 60, which is a six-cylinder chassis; the 50, which is a refinement of the car marketed last year, and the 40, a small four-cylinder car. The general sizes of the three cars are as follows:

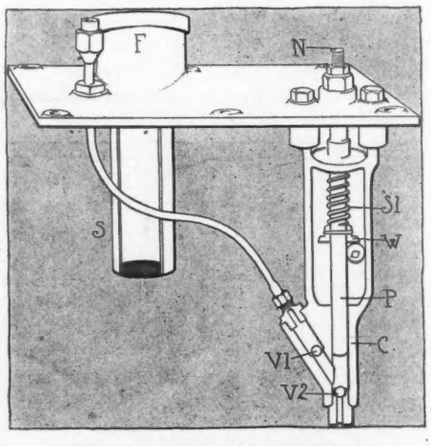
Model	No. Cyl.	Bore Inches	Stroke Inches	Wheelbase Inches	Tire Sizes Inches
60	6	4½	4¾	132	37 by 4½
50	4	4⅝	5¼	122	36 by 4
40	4	4⅛	4¾	116	36 by 4

Features of the Chassis

The three chassis embody identically the same construction, are built of the same quality of material and differ only in dimensions and power. The general features of design which have characterized the Cole cars in the past will be retained. These features include three-point suspension, unit power plant, cylinders cast in pairs, Timken floating rear axle and Timken I-beam front axle, cone clutch, three-speed selective gearset running on ball bearings and double drop frame.

Taking the Cole 50 model as a standard from which changes can be observed there will be noticed several alterations in design.

Aside from the change in the electrical system, which will be described in detail later, the chief alteration in the general mechanical design is in the fuel supply system. The gravity fuel feed, formerly employed, has been abandoned, and an air-pressure system installed. The fuel in the new cars is supplied from an air pressure tank at the rear of the car, the pressure being obtained from a cam-driven pump. The carburetion is changed, in that the new model O Schebler carbureter is employed. This is a double-jet construction with an auxiliary nozzle that cuts in at high speed. The new carbureter is simplified in that there are only two adjustments, the cam adjustment used on the model L is done away with.



COLE OIL PUMPING ASSEMBLY

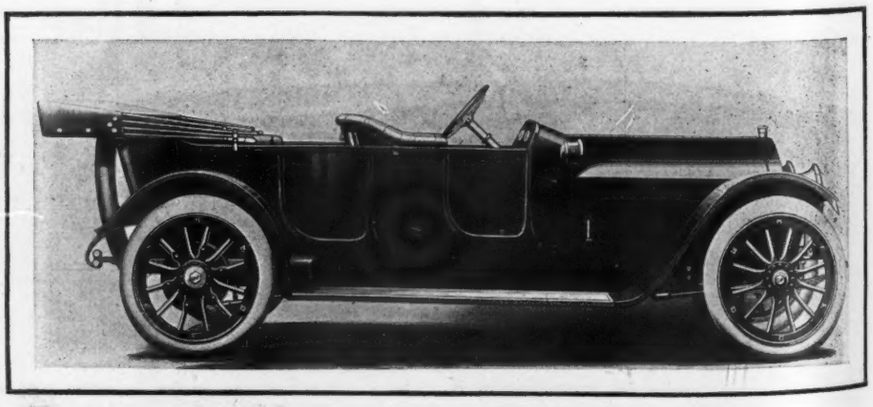
In order to give a lower center of gravity and to admit of slightly more room in the tonneau, a drop of 2 inches has been given the frame just back of the dash. This also serves to lower the front seats a trifle. Running boards are clean except for the battery box on the right side. A tool kit has been installed under the front seat. Special attachments for the name plate and license number have been provided for. A rigid horizontal cross-bar holds the two electric lights rigidly. The end of the crankshaft is finished in german silver and the starting crank, which is not ordinarily needed with the Delco starting system, is carried in the tool box.

The cone clutch embodies a slight change over this year's design Up to this time a single large drum spring was employed, but has been superceded by a construction involving six springs in a circle instead of the single one. The clutch has a full ball-bearing release.

The Lighting System

The cars for 1912 were provided with a separate dynamo electric lighting system which in the new cars has been supplanted by the provisions for lighting comprised in the Delco unit. Instead of the cowl being open, as in former models, a panel board has been run across the front of the car below the cowl, and carries the speedometer, fuel pressure gauge, sight oil feed, and the ignition and lighting switches. The effect is to give an appearance of accessibility and compactness not attained in designs of previous years.

The acetylene starter and the magneto of course have yielded to the Delco electric unit. In adapting the Delco system to the Northway motor it was only necessary to cut a vent into the housing surrounding the flywheel so that the Delco



SIX-CYLINDER COLE TOURING MODEL

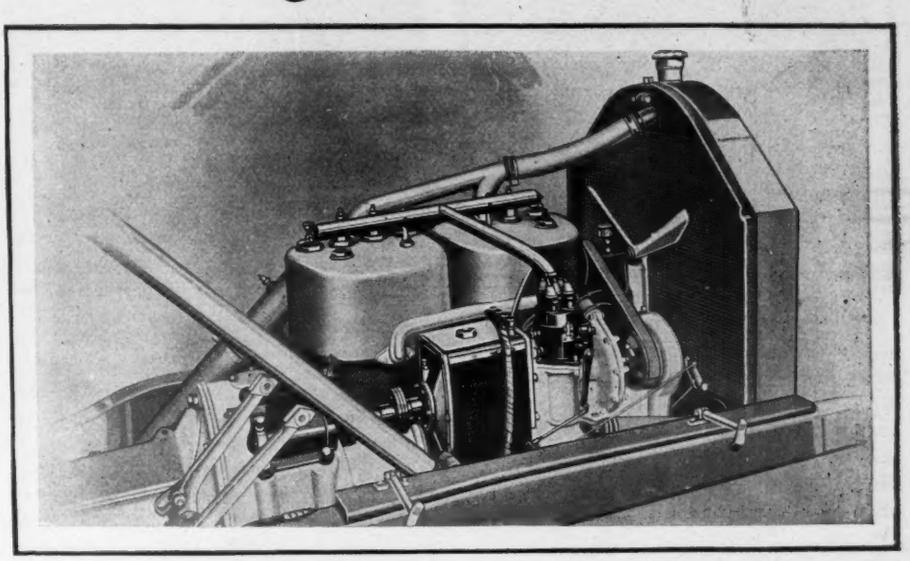
New Line to be Designated as Series 8

Delco System Electric Lighting, Starting and Ignition Fitted as Feature

starting gears could mesh with the motor flywheel. The change has been made neatly. In the 1912 models the front fender was brought back to the running boards at a rather gradual angle, but in the new cars the fenders are brought down over the wheel more abruptly, meeting the horizontal of the running boards some 15 inches further to the front. The result is to give the running board more rangy effect. The extra tire has been moved to the rear.

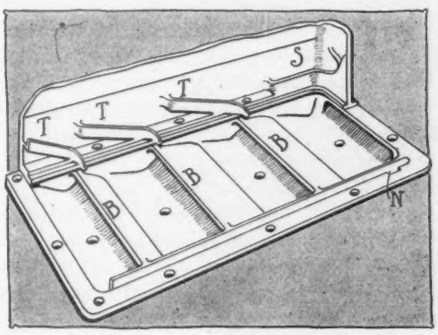
Similarity in Motors

Except for the difference in the number of cylinders the 60 and 40 motors are exactly alike, while the 50 motor is the same as the 40 except for the difference in cylinder sizes. The cylinders are cast in pairs in all three models. There are three bearings in the crankshafts of the 40 and 50 motors and four bearings in the 60 motor. The main bearings in the 40 motor are 1⅞ inches by 3 9/16 inches for the front bearing, 2 inches by 2¾ inches for the center bearing and 2¼ inches by 4 inches in the rear bearing, the first dimension in each case referring to the diameter and the other to the length of the bearing. In the 60 motor the crankshaft bearings from front to rear are 1⅞ inches by 3½ inches, 2⅛ inches by 2½ inches, 2⅛ inches by 2½ inches, and 2¼ inches by 3⅞ inches. The pistons on the 40 and 60 motors are 5¼ inches long and have 3 rings all above the piston. The piston on the 50 motor is 6 1/16 inches long and has three rings all above the wrist pin. The clearance between piston and cylinders is .003 inch. Adjustable push rods are employed the same as last year. These are hardened and ground steel and operate in cast iron dies. The valve lift on all three motors is 1/2 inch and the clear opening is 1 3/32 inches on the 40 and 60 and 2 1/32 inches on the 50. The timing



COLE-DELCO GENERATOR AND HIGH-TENSION DISTRIBUTOR

gears are fully inclosed, as are the valve-operating mechanisms. Lubrication of the motor is accomplished by means of a constant level splash system applied mainly by a gear-driven pump with



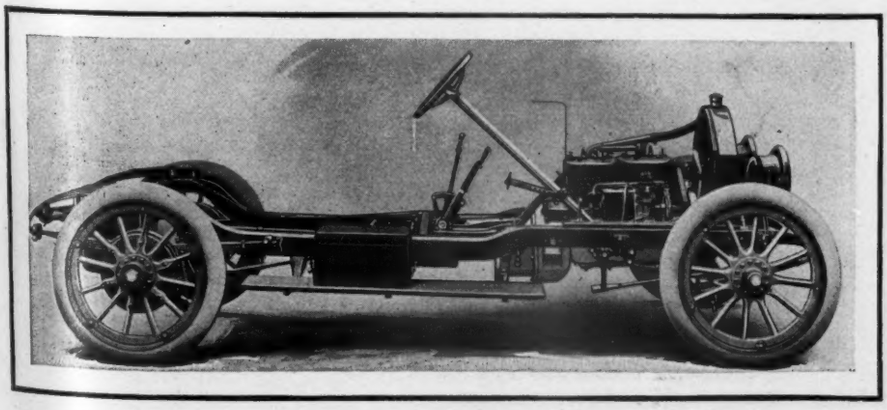
SPLASH PAN WITH BAFFLES

a sight feed on the dash. The lubricating system may be considered in three divisions, first, the oil reservoir and supply tank; second, the constant level splash system; and third, the automatic circulation of oil in the splash basin. The oil reservoir is cast integral with the crankcase and located on the valve side of the motor just to the rear of the timing gear.

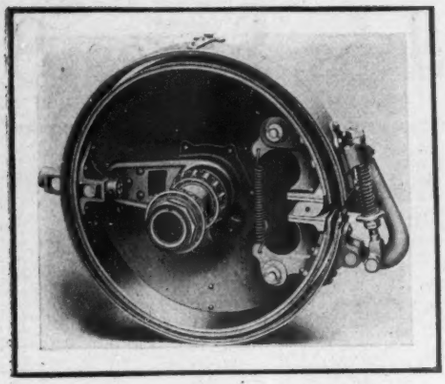
A large filler opening indicated at F in the sketch of the oil pump is placed on the cover plate of the reservoir and closed by a knurled cap screwed in place. At the other end of the cover plate is attached the pump. This extends downward into the reservoir, the only protruding working portion being the adjusting nut N. S indicates the oil strainer through which the fresh supply of oil passes. The oil pump comprises a cylinder feed C and a piston P normally held downward by the spring S1. A washer W between piston and spring bears on an eccentric cam on the shaft. The oil that is drawn through the bottom of the pump is delivered through the outlet O to a sight feed on the dash, from whence it flows to the crankcase. B1 and B2 are two ball valves, one in the pump proper and the other in the outlet. The shaft carrying the eccentric is operated from a camshaft by means of a worm gear at a reduction of 25 to 1.

Splash Pan Used on Cole

At the bottom of the crankcase is a splash pan shown in one of the sketches. The dippers on the ends of the connecting rod dip into the troughs and not only serve to carry oil to the crankpins but also splash it up into the cylinders and into pockets above the main bearings from which they are oiled. The oil pump supplies fresh oil to the splash basin circulating system. The circulation of the oil in the crankcase is accomplished by the baffle plate between the basins. They are sloped so that oil which is splashed upon them will flow from the back cylinder to the forward one. In addition to this there are a number of troughs T on the side of the crankcase wall so that oil



CHASSIS OF COLE 40 FOR 1913



BRAKE ASSEMBLY ON COLE

splashed out of one of the dip chambers is carried by the trough into the next forward chamber. At the front end of the crankcase is a splash basin S which communicates by means of an opening and duct with the rear splash basin, so that the oil is returned from the forward to the rear end of the crankcase. The cooling of the motor is maintained by means of a gear-driven circulating pump and a Mayo honeycomb radiator assisted by an adjustable belt-driven fan at the forward end of the motor.

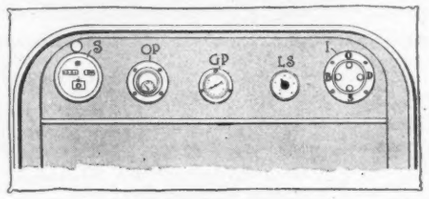
Pressure Fuel System

As stated above, fuel supply is maintained under pressure in the 1913 cars. A 20-gallon gasoline tank is hung under the rear cross member of the frame, and the liquid in it is kept at a pressure of about 2 pounds by means of a small air pump on the crank base. This is a plunger pump operated from the exhaust valve cam, the plunger being at right angles to the exhaust valve push rod. It is oiled by splash from the crankcase and is adjustable for pressure by a spring bypass controlled by a thumb nut and lock nut. The pressure in the fuel tank is registered on a gauge in the driver's compartment and a gasoline gauge is located on the tank at the rear. A hand pump is supplied as an auxiliary. In connection with this system is the new model O Schebler carbureter with double jet. A small control lever on the steering post cuts out the operation of both main air passages and locks the air valve to give a rich mixture and assist in starting. The claim of the makers of the Cole car for flexibility with the new motor and new fuel system is backed up by a recent test in which it is stated the car was run at a speed of 1½ miles per hour on the high gear with five passengers.

The Delco electric starting, lighting and ignition system as applied to the Cole cars embodies a combined motor generator and ignition distributor. This unit acts as a generator to store electric energy in the storage battery, which in turn supplies current for the ignition spark and the electric light and returns current to the motor generator unit to run the latter as a motor for starting the engine. The starting system comprises the following units: The motor-generator, starter transmission, magnetic clutch, controller switch, storage battery, ampere-hour meter, and cutout relay; the last four parts are combined in one unit on the runningboard. In addition there is the high tension distributor incorporated with the motor generator and the coil, etc., of the ignition system.

Delco Electric System

The motor-generator is located on the right side of the unit power plant and is driven by a roller clutch connected to the pump shaft through a leather faced clutch. This clutch allows the armature to revolve at a speed twenty times that of the engine when running as a motor for cranking. When used as a generator, it is driven through the roller clutch directly from the timing gear. The generator is self regulated and requires no exterior apparatus to regulate its current. It starts



COLE DASH ARRANGEMENT

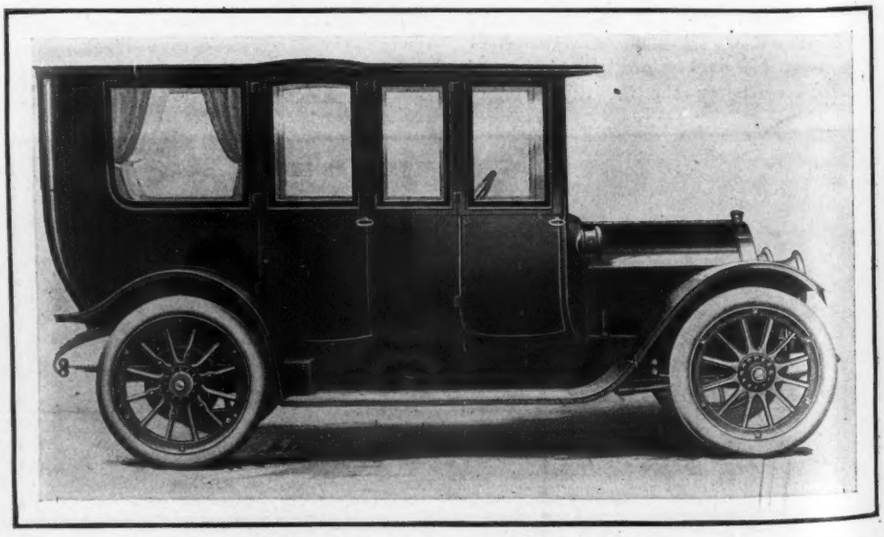
to charge the storage battery at about 300 revolutions per minute and the current gradually increases with the speed of the engine up to about 1,000 revolutions per minute, above which speed the output remains practically constant. For starting, the motor-generator is thrown into connection through gears with teeth cut on the periphery of the flywheel, the starting transmission bolting directly on to the flywheel case. Adjacent to the clutch pedal under the toe board is the magnetic clutch. This consists of the electro magnet with a latch and pawl. The clutch is actuated by pressing the starting button under the edge of the front seat. This completes the circuit which energizes the magnet, causing the latch to engage with the pawl on the clutch pedal and throws the starting transmission into operation.

The ignition system comprises a high-tension distributor and timer with automatic spark advance, a non-vibrating coil, resistance unit, controlling relay and ignition switch. Current is taken at 6 volts from the battery in the ordinary way. The ignition system is simply the improved Delco system. The battery box contains a twelve-cell, 80-ampere hour Exide storage battery, the controller switch, the ampere-hour meter and the cutout relay. The controller switch is an eight-pole, double-throw switch. In running position, it connects four three-cell sections of the battery in multiple, giving 6 volts, and also makes connections for lighting, ignition and charging. In starting position it connects all the cells in series, supplying current to run the motor generator as a motor at 24 volts. The function of the cutout relay is to open the circuit between the battery and generator to prevent the former from discharging into the latter when its speed is less than 300 revolutions per minute. It also automatically closes the circuit above that speed.

Cole Clutch Changed

Cole clutches, though of the cone type, as in previous models, have been changed by the substitution of six retaining springs in a circle instead of the single central spring. The three-speed selective gearset shows a change in the method of mounting the driving gears, in that two annular ball bearings are used instead of the one employed formerly.

Final drive is by shaft through two Spicer universal joints to the floating rear axle. The torsion rod is of the V type and is made of seamless steel tubing brazed into drop forged steel brackets with two vertical crossmembers. The internal brake levers are brazed into sleeves and the external levers pinned to shafts within them. The ends of the brake cross rods where they have a bearing in the frame are rounded to prevent the chance of binding



BERLINE LIMOUSINE ON COLE 40 CHASSIS

with twists of the frame. Instead of the toggle joint operation of the internal brakes used in the present models, the 1913 brakes are operated by a cam arrangement.

Frames on the three models are pressed steel channels, those of the two larger models being $\frac{3}{16}$-inch gauge with 4½ inches maximum depth, and 3¼-inch flange. The frame of the smaller model is of ⅛-inch metal, but is otherwise the same. Springs are three-quarter elliptic in the rear and semi-elliptic in the front. They are of heavy construction with nine leaves. The lower portion is almost flat in the rear and a true flat with the load in the car.

Deep Cowl on Dash

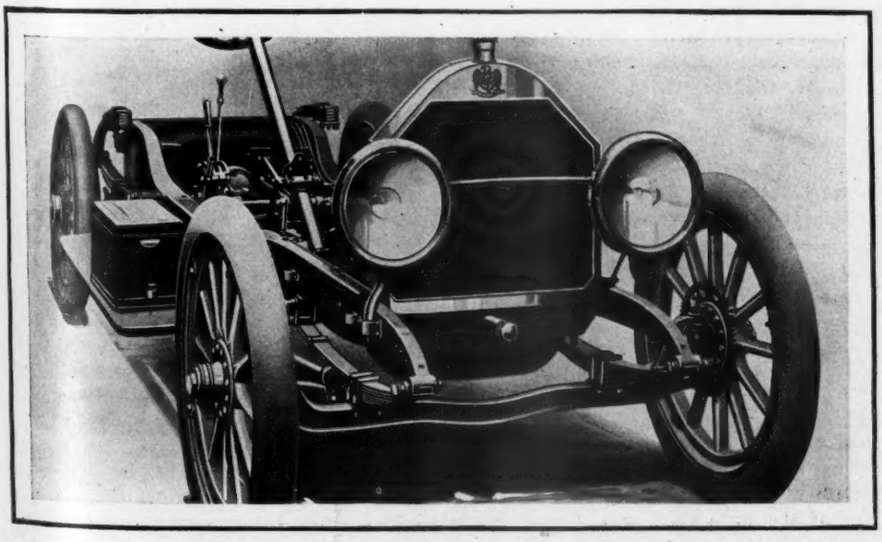
A general tendency toward straight lines is noticeable in all the bodies. The deep cowl, illustrated in one of the sketches, carries a panel which contains the oil sight feed OP, speedometer S, the air pressure gauge GP, lighting switch LS and the ignition switch I. The latter consists of four buttons giving connections to battery, generator, starting and off.

To the 40 chassis are fitted roadster and touring bodies; to the 50 and 60 chassis a five-passenger touring convertible to seven, roadster, toy tonneau, coupe and limousine bodies. The metal finish is black and aluminum and the lamps are finished in german silver.

Perhaps the most noticeable improvement has been in the outward appearance. The body lines have been greatly refined, all unsightly concave surfaces being eliminated, and the general effect being one of gentility, that comes of direct and frank lines and simplicity. It is also notable that the touring bodies set lower.

Throughout the line it is noticeable that every effort has been made to produce a car in keeping with the Cole reputation.

The Cole production has been doubled for the coming year. A new factory has just been occupied and President J. J. Cole has his architects working on plans for another structure similar to the one just completed.



FRONT VIEW OF CRANKLESS COLE SIX CHASSIS

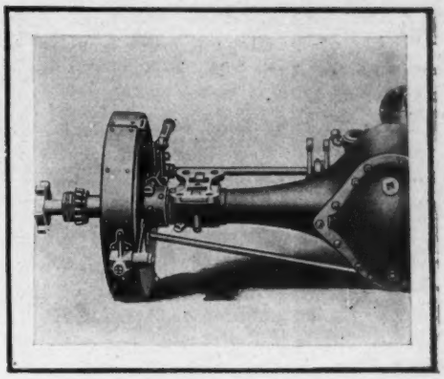
The Motorists' Bookman

Internal Combustion Engines

AN elaborated translation of a work published originally in Sweden, "Internal Combustion Engines and Gas-Producers," by C. W. Askling and E. Roesler, of Kernosand and Stockholm, Sweden, has been published by the J. B. Lippincott Co., Philadelphia, Pa. This work is a general treatise on internal combustion motors of all types, and consists of two parts, the first dealing with gas producers, and the second with internal combustion engines. The first portion may be passed, as dealing with subjects foreign to motor car practice. The second part, however, should be of great interest to motor car engineers, dealing mainly with the greater development of direct heat engines as applied to stationary and marine work. This, while not strictly related to motor vehicle practice, is analogous to it in the problems of the conversion of latent chemical power into active energy. The development of these types of engines has been radically different from that in the field of motor car and flying machine practice. That both fields are mutually beholden to the activities of the exponents of the other, is recognized and set forth by the authors, and the exposition of the engineering practice and development of the two fields, side by side, should prove a work of great value to students of the problems of either.

R. A. C. Year Book

Containing such a mass and variety of information regarding the motor car in England as to constitute a veritable compendium of motor car information for those contemplating motoring abroad, the Year Book of the Royal Automobile Club of Great Britain has just been issued.



COLE FLOATING REAR AXLE

It is sent free of charge to members of the organization, a charge of 5 shillings being made for copies to others than members. The book contains in addition to the complete rules, regulations and by-laws of the club, and the motor vehicle laws of the United Kingdom, hints and information regarding nearly every feature of foreign touring and motor car operation. It is attractively bound in cloth in royal blue and gold, size, 5 by 7½ inches. It is published by the Royal Automobile Club, London.

English Motor Treatise

An elemental study of motor cars from an English view-point has been prepared by George C. Sherrin, A.M.A.I.E., and edited by Lord Montagu. The title of the book is "The Montagu Motor Book," and it is published by The Car, Illustrated, Ltd., of London. It completely describes all of the principal English cars, and in so simple and complete a manner that the merest novice cannot fail to comprehend them. It is absolutely non-technical, and every point is carefully illustrated. While no description is given of any American gasoline car—as a study for the beginner it is doubtful if anything better could be obtained. The book covers the subject of the anatomy of the car very thoroughly, including complete descriptions of the engine, carbureter, ignition, gearset, etc., and contains a description of the White steam car, and the Knight-Daimler engine. Tires are treated upon, and a chapter on electric cars is included. The book concludes with a driving lesson that is very complete, and a chapter on roadside repairs. It is bound in light gray cloth and there scarcely is a page but what has an illustration of some sort. To supplement the text, a series of five working models is offered by the publishers, which in conjunction with the book should prove a combination of much value.

Motor Road Maps

"Auto Road Maps for California and Nevada" is the title of a vest-pocket edition for the 1912 season, which the Monarch Oil Refining Co., has just published. While it advertises the Monarch-Diamond motor car oils and greases, the little book contains much valuable information in the way of routes in the two states with maps. Price, 50 cents.

From the

MANITOBA Licenses—The total number of Manitoba licenses issued this season since April 1 has reached the large number of 4,064.

State Meeting Called—The annual convention of the New York State Automobile Association will be held in December, undoubtedly in Utica, N. Y.

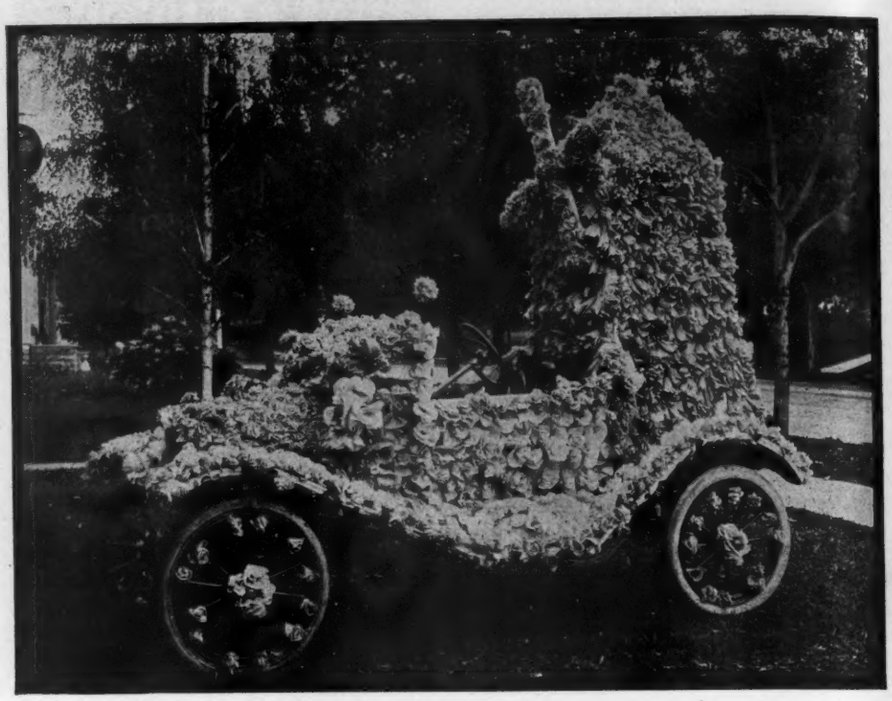
Wants Home Among Pines—A country club among the giant pines of Swarthout canyon, 7,000 feet above the city of Los Angeles, is the ambition of the Automobile Club of Southern California. Six miles of the roadway leading to the site of the new home already have been graded.

Club Sets an Example—The Watertown Motor Club of Watertown, Wis., organized 3 months ago with seventy-five members, has completed a sample stretch of road, the principal value of which is to illustrate the small cost of maintaining ordinary highways when proper methods are used. A stretch of 1 mile of dirt road between the western city limits and the village of Ixonia has been scraped, the stones removed and a split log drag applied after even the lightest shower and is today one of the finest pieces of highway in Wisconsin.

Clubmen Can Make Arrests—Special police powers have recently been granted a number of members of the Hoosier Motor Club, Indianapolis, for the purpose of aiding the police department in enforcing the speed law. One evening recently, W. S. Gilbreath, secretary of the club, ran down and arrested Baird Brill, who was running at the rate of 30 miles an hour. In police court Brill was fined $30 and costs. The regular schedule of fines for speed violators in the Indianapolis police court is $1 a mile, up to the maximum of $50 provided by the law.

Rockingham to Have Meet—The owners of Rockingham Park, Salem, N. H., have decided to hold another motor race and motor cycle meet at the park on Columbus day, October 12. Plans are under way to bank the track and stretch it out to a 2-mile course after the plan of the Indianapolis speedway for next season and then hold some big events there. At the last race meet, although it was postponed twice, there was an attendance of more than 17,000 people, and the greater portion came in motor cars, there being more than 3,000 checked at the track. James Fortesque has been chosen referee and Lon Peck starter of the race meet.

Touring Encourages Road Building—The fact that Amarillo is on the motor car tourist route between points in Texas south and east of Amarillo and Denver as well as on the route between Oklahoma and Kansas points and New Mexico and other points of the southwest has forced upon the people of that section of the panhandle the necessity of improving the highways, and with this object in view steps have been taken by the chamber of commerce of Amarillo and other civic bodies of this part of the state to not only improve the existing roads but to construct others that will be devoted exclusively to motor car travel. Signboards and distance markers will be placed upon all of the main highways.



MRS. JANE BARTELS' CAR IN SYRACUSE PARADE

Gives Police Control—A change in the Pennsylvania state law that will confer power on the Philadelphia police department to control the issuance of all motor car licenses in this city is being agitated as a remedy for making easier of detection and running to earth certain forms of crime in which the motor car plays a leading part.

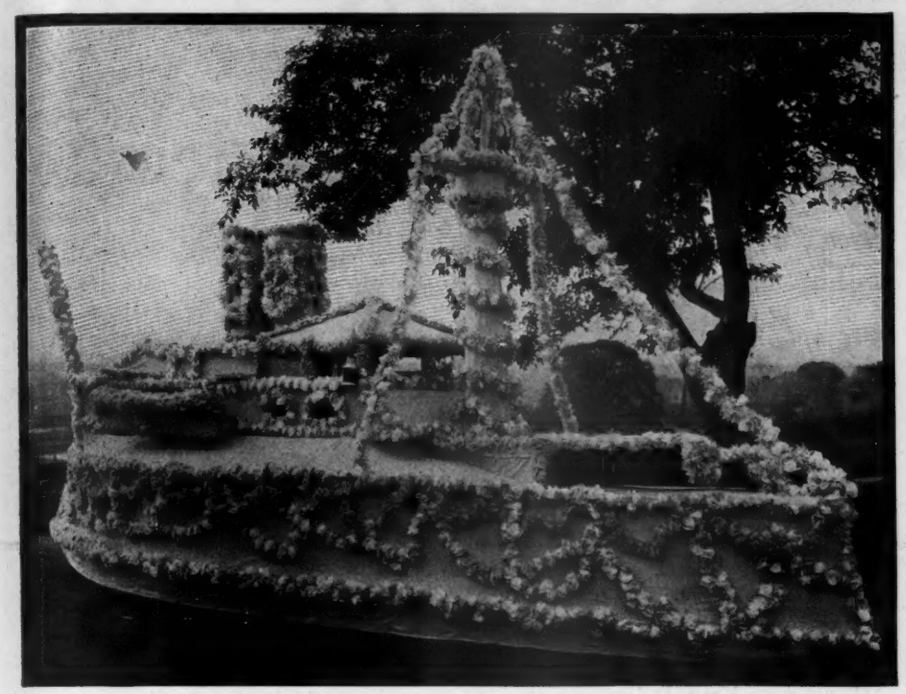
New Indiana Club—The Lawrenceburg Automobile Club has been organized at Lawrenceburg, Ind., with twenty-seven members, the officers being: President, John W. Oberting; vice-president, Robert E. Oberting; and secretary-treasurer, Edmund Bauer. An effort is being made to enlist every motor car owner in Dearborn county in the organization.

Illinois Fund Grows—Secretary of State Doyle of Illinois, in response to an inquiry states that the money in the state treasury accruing from the motor car licenses in Illinois is now $401,162. The law as amended and in force provides that said fees shall be set aside as a road fund to be appropriated by the general assembly for use on highways outside of incorporated cities, towns and villages. Most of the boards of supervisors in the various counties of the state are adopting resolutions concerning this fund and, in nearly every case, the rural legislators demand that the money be divided among the counties to be expended upon the roads. The Vermillion county board varied from the usual course and, at its session this week, favored a return of one-half to the counties, while the state be permitted to utilize the other half for the building of state roads.

Car a Road-Building Machine—D. M. Clark, road superintendent of Yavapai county, Ariz., is transforming his 40-horsepower Stearns into a road-building utility. The rear seat has been discarded and replaced with a big air compressor. This apparatus will be driven by power from the engine and attached thereto will be a big mine drill. When the remodeling is complete the drill will be used in boring on the Copper Basin road, which is to be widened and repaired. It is expected that it will be very valuable in rock work. Mr. Clark plans to patent his invention.

Syracuse Holds Parade—The best motor parade ever held in Syracuse, N. Y., was given Tuesday night, September 10, as a feature of the annual carnival of the Mystique Krewe of Ka-Noo-No, in connection with the New York state fair. More than 100 cars were in line and the decorations were the most pretentious since the feature was instituted several years ago. Many prizes were offered, the principal ones being as follows: For women drivers: Mrs. Jane Bartels, first; Mrs. Gus Weinbrecht, second; Mrs. Charles C. Hanna, third. Most unique design: Dev Brothers & Co., first; A. C. Fredenberg, second; Lee Stickley, third. Dealers: American Cole Motor Car Co., first; W. R. Shaw, second;

Four Winds



DR. GRACE CARROLL MOYER'S PRIZE WINNER

J. G. Bex, third. Commercial cars: P. R. Quinlan, first; Boedtker Tobacco Co., second. Mrs. Bartels' car represented a Dutch windmill with the fair driver attired as a Dutch maid.

Ohio Counts its Cars—According to the figures in the office of the state registrar Ohio has 60,500 licensed cars, and, notwithstanding the lateness of the season, applications are still coming in at the rate of sixty a day.

Mark River-to-River Road—September 15 was marking day from one end of Iowa to the other. All along the River-to-River road the local motor associations were out in force painting the poles along the route from Davenport to Council Bluffs. A white band 18 inches wide with a large red letter R will be the mark spread along the thoroughfare.

Roast for Milwaukee—Professor L. C. Smith, paving expert of the University of Wisconsin and member of the staff of the Wisconsin geological survey, has given his opinion that Milwaukee is the worst paved city in the United States. Motorists generally agree with Professor Smith, who says that the trouble is the result of the lack of uniformity in the use of materials.

Oklahoma Revising Laws—An organized effort will be made by the Oklahoma Good Roads Association to obtain the enactment of laws for the construction of a first-class system of highways by the next legislature. With this object in view it has appointed two committees which will direct the work of securing the legislation desired. The program contemplates a general revision of all laws affecting roads, including that enacted by the last legislature. The association has been in communication with the candidates of all parties for the legislature and out of the 100 districts eighty-six are favorable to new legislation along the lines suggested.

Beloit Aroused to Action—Following the example of the Fort Atkinson Automobile Association of Fort Atkinson, Wis., in conducting two booster tours for good roads and commercial advancement, the Beloit Automobile Club will on October 1 and 2 make a run to Milwaukee and return. Forty-one cars already have signed for the tour. Thousands of pieces of advertising literature will be carried and every industry in Beloit will be represented. Milwaukee has been made the night control, the run one way being approximately 75 miles.

Women Road Boosters—Valuable aid is being given the New Orleans-Chicago highway project by the women's clubs of Louisiana. Printed matter is being sent to all residents along the proposed route of this model road. Attention is called in the pamphlets to the fact that the United States is the only great country that has not built improved trunk lines of roadways. France has built a single road 750 miles long in Algeria and England constructed a government road 1,000 miles long, the length of the Malay peninsula, it is pointed out. If it is a paying investment to develop such outlying regions, it is argued, that a splendid roadway through the richest section of the United States certainly would prove of great profit. Appeal is also being made to the patriotism of the people, as the road is to be a memorial to General Andrew Jackson.

Many in Southern Run—One hundred and four cars were in line when the Nashville sociability tour reached Huntsville, Ala., last week. Nearly 600 persons from Nashville, Murfreesboro and Fayetteville were passengers. Huntsville entertained the guests with a banquet in Spring Park.

Decatur Progressive—Chief of Police Allen of Decatur, Ill., is enforcing the traffic ordinances in that city. Vehicles moving slowly are required to hug the curbing in order to permit faster moving cars or carriages to pass the wagons or other heavily loaded outfits. The police are also trying to control the muffler cutout.

Convicts Repairing Glidden Route—Permission has been given to put a large force of convicts on the Louisiana roads that will be traveled by the Glidden tourists. In the month which will elapse before the passage of the tour it will be possible to improve all of the worst portions of the road. In addition much work is being done on the route by the parish authorities.

Grossman Offers Race Bonuses—Pursuant to its regular practice, the Emil Grossman Co. offers again this year cash prizes to the winners of the important road races. It will award a prize of $500 to the winner of the grand prix; $500 to the winner of the Vanderbilt cup; $100 to the winner of the Pabst Blub Ribbon trophy, and $100 to the winner of the Wisconsin Motor challenge trophy, provided Read Head spark plugs are used by the winners throughout the respective races.

Must Turn over Fines—According to opinion rendered by State Attorney General Carmody of New York, justices of the peace throughout the state must turn over to the state treasurer the full amount of fines collected for criminal violations of the law in relation to the use of public highways by motor vehicles. The question was raised by State Treasurer Kennedy, who received the residue of a fine after deduction had been made for statutory fees by Justice Isaac Allen, of Southport, Chemung county. These fees, says the attorney general, are properly a town charge and should not be charged to the state.

Odd Arrest in Canada—For running a motor car by displaying the letters E-M-F instead of the regulation license number plate, as required by the provincial law in Canada, C. M. Burklew, a chauffeur employed by the E-M-F Automobile Co., of Walkerville, Ont., was arrested. At the hearing of the case Attorney J. F. Gross, who appeared for the defendant, claimed that the manufacturers had authority to run the car by displaying the letter of their firm instead of the license plate. The hearing was adjourned to give the defense time to submit the case to the provincial authorities.

The Realm of the Motor Truck an Advertising Medium

Great Publicity Is Gained Through Use of Modern Power Delivery

By William B. Stout

THE best advertised business must put up the best front. A claim for superiority of service must look the part and if extra advertisement is obtained for any firm through the use of motor trucks the quality of the advertisement will be dependent largely upon the appearance of the truck rather than upon its service.

At a stag dinner recently one of the guests appeared in a soft collar, the temperature at the time being 85 in the shade. A remark was made by another party in regard to the amount of good sense displayed by the man in question and comment was passed as to the neat appearance.

"A soft collar on a gentleman," said one of the observers, "is a great thing and extremely neat if he have with it a clean shave, a clean shirt, a new haircut, a well pressed suit and freshly polished shoes. Otherwise—not"

Anything which draws attention to either a man or his business to obtain the correct effect requires all the attributes of good taste.

If a motor wagon is put into service for delivery work, even at the present time it is unusal enough to call the attention of the public to the firm whose name appears on the side of the vehicle and the standing and methods of the firm will be judged by the motor vehicle much more severely than would be the case with the horse equipment. We expect a coal wagon to be dirty, and but little effort is made to keep these vehicles washed. The minute a firm adopts a motor truck for delivery work there is a different attitude on the part of the purchaser of the coal and of the man on the street who sees the machine go by toward an accumulation of dirt.

Coal dust will not injure an ordinary wagon but any man knows that any kind of grit is harmful to any kind of mechanism and to see even a coal wagon of the motor type covered with dust and grease with rusty bolts on exposed parts is to give the impression of slovenly business methods to even a casual observer.

One Chicago coal company in March of this year had running a motor truck which had been in use only 2 months which looked as though it had never had a wash nor any care in that time. Being a coal truck it had very evidently been treated like a coal wagon. The tires were in very bad shape due to the fact that a 4-ton load was being carried regularly on a 3-ton machine. The chains were loose and the sprockets were worn. Dust in places was ¼ inch deep on the chassis. The dumping apparatus had lost a small bolt and was out of commission for want of a 50-cent repair. The writer knows nothing of this coal company nor anything with regard to it sinternal management, but the looks of the vehicle in question certainly gave him a bad impression.

On the other hand a number of times recently motor trucks of another Chicago coal firm, the City Fuel Co., have passed the writer looking as though they had just come from a garage and a fresh washing, no sign of dirt being evident on the machine in any particular, the appearance giving the impression of thoughtful management in connection with the coal busienss. Not through any knowledge of the affairs of either company or with any preference one way or the other, the consumer, if it came to a choice, would undoubtedly order his coal delivered in a clean machine. If the deliveries were made by horse equipment the difference would not be so marked if noticed at all.

Another case in point is the truck operating for a line of drug stores on the north side, Chicago. The car is small, it is true, but having been used but one season has the appearance of a rattletrap. For a fair percentage of each day it stands with its poor coat of dust-covered paint in front of one of the finest drug stores in Chicago, advertising to passersby who do not care to take the time to glance into the door an impression which is not so. The wonder is that the firm so thorough in the matter of internal fittings and design of the store itself—or stores, for there are four in the series—should be so entirely delinquent in keeping up the appearance of the delivery vehicle. It would seem almost like a man in a dress suit with a frayed red necktie; the suit may be all right but one sees the necktie first.

Chicago itself is not to be complimented on the general condition of the motor trucks operating for the city library in the matter of external appearance but this is not the fault of the management in charge, there being no money available sufficient to care for the cars other than their running gear and machinery. This fact, however, does not take away from the questionable advertising value of a coat of mud.

On the opposite side is an example of the Hoeffner Dry Cleaning Co. of Chicago, operating a small Ford delivery wagon. When not operating, this machine stands in front of the establishment as clean as washing can make it, neat in design and lettering, a very striking advertisement giving the impression of progressive methods and cleanliness all through the shop. Hardly a day goes by but what Mr. Hoeffner receives inquiries and business as a direct result of the condition and appearance of his car. A motor truck is truly an advertising answer.

A bread company has a motor truck operating in the central district of Chicago delivery work whose condition suggests anything but an appetizing product. The truck may have been painted at one time or another for the sign is still legible. Everything on the machine seems to be in the last stages of dilapidation. The front spring shackle, most noticeable on the car as it was seen at the curb, had been repaired by a very crude blacksmith, who did a most atrocious job of hammering in making the fitment which, after it once had been applied was allowed to rust without hindrance. The side chains on the machine were in very bad shape and the noise made by the machine in passing was irritating.

Though an electric truck is supposed to work silently this machine made as much noise as the crude gasoline trucks of the early days. The steering gear of the machine was very loose, the play amounting to a full half turn of the wheel. This point nearly led to an accident a short time later when the machine was entering the alley at the rear of the Hayward building through the inability of the driver to take up the lost motion quick enough. If the outside of the truck presents as uncleanly an appearance as did this the question immediately comes to one's mind as to whether the interior is kept clean enough for a product to enter one's mouth.

Commercial Car

Wear and Tear on Solid Rubber Tires

Expert Gives Statistics of Benefit to Truck Manufacturers

By C. W. Martin, Sales Manager Goodyear Tire & Rubber Co.

A TOPIC of natural interest to all owners and operators of motor-driven commercial vehicles, is the discussion of methods to prevent the wear and tear of solid rubber truck tires. This part of the equipment is admittedly the most serious item in the cost of truck up-keep. There are many insignificant details in the operation and care of a motor truck that have an important bearing upon the life and service of its rubber tires.

Natural or ordinary wear under normal conditions, causing abrasion, is attributable principally to tractive effort, starting and stopping, or skidding. When these elements are not attended by others, which will be described later on, a solid rubber tire can be expected to give the maximum of service and to wear out legitimately.

Undue abrasion may be caused by wheels being out of alignment, resulting in a tire wearing down smoothly and prematurely, thus more than likely causing an impression with the truck owner that the tire is not all that it should be in the matter of quality and workmanship.

Disalignment sufficient to produce this effect in at least some degree may be so slight as to be unnoticeable in the absence of special attention. Wheels out of alignment very frequently are found, particularly front wheels. Usually these result from striking curb stones or any other obstructions glancing blows, thus causing bent axles, wrenched steering knuckles, or dished wheels. The wear is the same as would be obtained by holding the tread of the tire on a swiftly moving grindstone and revolving it slowly.

Turning the front wheels by means of the steering apparatus when the truck is not in motion also has its bad effect.

Disalignment may be detected by measuring the distance between rims of the two front or two rear wheels at the extreme fore and aft points, care being exercised to see that the front wheels, when measuring them, are pointing straight ahead or parallel with the body of the truck. The distance at fore and aft points will be found to be the same if the wheels are in perfect alignment.

Traveling over exceedingly rough pavement and sharp stones, such as are found on newly macadamized roads, produces cuts into which sand and grit work, slowly enlarging the gap and eventually causing the destruction of a solid rubber truck tire.

Continual running in car tracks invariably results in the destruction of a truck tire, as the edge of the tire, or the very small portion which runs on the rail is carrying the load intended for the whole tire. Also a shearing effect is thus produced which is very injurious to the tire's fastening. Cutting also may be caused by careless driving on streets in normal condition, or by careful driving combined with overloading, on bad streets. This condition may be due to the tire being allowed to stand in oil in the garage. Oil has a chemical action upon rubber which is extremely injurious.

In this day of increasing popuarity of demountable tires and standard wheels as adopted by the Society of Automobile Engineers it is important that wheels be of proper dimensions and that all bolts be thoroughly tightened so as to prevent circumferential movement of the tire on the wheel. A tire will fail to stand up under overloading, which strains the fastening and crushes the tread, causing bruises and chafing. Speeding virtually has the same results as overloading, producing shocks when riding over obstacles of various kinds which bruise and cut the rubber.

The Goodyear Tire and Rubber Co., after a thorough and scientific analysis of all conditions and requirements by its experimental engineering department, has adopted and recommend the accompanying graduated table of carrying weights:

It will be noted that tires are rated according to their diameters as well as their cross-sectional size; and speed has been given proper consideration. A careful observation of the table will have its effect in reducing truck tire mile cost.

MANY ADOPT TRUCK GUARANTY

Fourteen truck manufacturing members of the National Association of Automobile Manufacturers out of thirty-three now making commercial vehicles have definitely adopted the new truck warranty recommended by the executive committee. Fourteen makers who are not members have also adopted it and will incorporate it in their new catalogs and contracts of sale. These companies are as follows:

Members of N. A. A. M.—Baker Motor Vehicle Co., Federal Motor Truck Co., Gramm Motor Truck Co., Kelly Motor Truck Co., Knox Automobile Co., Locomobile Co. of America, Packard Motor Car Co., Peerless Motor Car Co., Pope Mfg. Co., Reo Motor Car Co., Selden Motor Vehicle Co., United States Motor Co., Waverley Co., White Co.

Non-members.—Auglaize Motor Car Co., Brown Commercial Car Co., Chase Motor Truck Co., Champion Wagon Co., Dorris Motor Car Co., Geneva Wagon Co., Gramm-Bernstein Co., Harwood-Barley Mfg. Co., Hatfield Auto Truck Co., Kearns Motor Car Co., Sanford Motor Truck Co., Stewart Motor Corp., U. S. Motor Truck Co., Veerac Motor Truck Co.

In addition to these twenty-eight companies, there are four members and nine non-members who approve the warrant just as it is written and will adopt it if a majority of truck makers do so. They are:

Members—Nordyke & Marmon Co., Ohio Electric Car Co., Walter Motor Truck Co., Willys-Overland Co.

Non-members—C. L. Barker, Bowling Green Motor Car Co., Chicago Pneumatic Tool Co., Dayton Auto Truck Co., Marathon Motor Works, Moreland Motor Truck Co., Poss Motor Co., Sandusky Auto Parts and Motor Truck Co., H. E. Wilcox Motor Car Co.

This makes forty-one companies committed to the warranty. Three other member companies that are not yet actively

GRADUATED TABLE OF CARRYING WEIGHTS FOR SOLID TRUCK TIRES

Size		lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	M.P.H.
2 "	Singles	450	475	500	525	550	575	20
2½"	Singles	670	710	750	790	830	870	20
3 "	Singles	900	950	1000	1050	1100	1150	20
3½"	Singles	1130	1190	1250	1310	1370	1430	18
4 "	Singles	1350	1425	1500	1575	1650	1725	16
5 "	Singles	1800	1900	2000	2100	2200	2300	14
6 "	Singles	2250	2375	2500	2625	2750	2875	12
7 "	Singles	2700	2850	3000	3150	3300	3450	10
2 "	Dual	1125	1188	1250	1312	1375	1438	18
2½"	Dual	1675	1775	1875	1975	2075	2175	18
3 "	Dual	2250	2375	2500	2625	2750	2875	16
3½"	Dual	2825	2975	3125	3275	3425	3575	14
4 "	Dual	3375	3560	3750	3940	4125	4310	13
5 "	Dual	4500	4750	5000	5250	5500	5750	12
6 "	Dual	5625	5940	6250	6565	6875	7190	10
7 "	Dual	6750	7125	7500	7875	8250	8625	10

TILTING DRIVER'S SEAT ON LAUTH-JUERGENS TRUCK

engaged in the commercial field state that as soon as they enter it on a sufficient scale to have need for a guarantee they will use the standard warranty. These are the Buick Motor Co., Columbus Buggy Co., and Jackson Automobile Co.

Only five members heard from are opposed to use of the warranty. They are the Autocar Co., Ford Motor Co., Franklin Mfg. Co., General Motor Truck Co., and Pierce-Arrow Motor Car Co. Their objection is that they do not consider it sufficiently liberal, particularly as regards its duration. They prefer a guarantee for 1 year, or even, apparently, in one of two cases, one without limitation. The Buckeye Mfg. Co., Driggs-Seabury Ordnance Corporation, National Motor Truck Co., and Wichita Falls Motor Co., all non-members, are of similar opinion. In the case of the Buckeye and National companies, their literature is out already, incorporating a year's guarantee, and they do not feel that they can recall this warranty now and substitute the 90-day standard warranty.

On the other hand, there are a number of manufacturers who voluntarily took occasion particularly to commend the 90-day limit, holding that a guarantee for 1 year was entirely too long and that if a defect does not appear in 3 months of actual service it is prima facie evidence that proper materials and workmanship were used in the construction of the car for the purpose for which it was built. Among these companies are the Dayton Auto Truck Co., Marathon Motor Works. Poss Motor Co. and the Sandusky Auto Parts and Motor Truck Co. One company, which was forced temporarily to suspend manufacture of trucks because of the 1-year guarantee which necessitated keeping in running condition trucks that were placed in the hands of ignorant negroes and incompetent white men, believes it will be able to resume their manufacture with some profit if the 90-day warranty is generally adopted.

The only serious obstacle in the way of practically universal adoption of the new standard warranty is the uncertainty as to whether or not a majority of leading manufacturers will adopt it and, once adopted, it will be lived up to strictly in all cases. While it is realized that those who adopt the warranty will do so with the sincere intention to live up to the letter of it, there are conditions in the trade that will have a tendency to cause some companies to deviate from its terms, particularly the 90-day limit, and thereby work a hardship on those who abide by it for the good of the industry as a whole.

Both in and out of the association there is a strong sentiment in favor of cooperation on this subject and a belief that a great deal of good can be accomplished by adopting a uniform guarantee and living up to it. This implies not only that the manufacturer shall abide by it, but that all of his agents shall be restrained diligently from making verbal or any other sore of guarantees or promises not authorized by the manufacturer. It was the object of the association in recommending the new warranty to provide a means whereby, through cooperation, the unsatisfactory conditions due to irregular guarantees might be corrected. The final clause of the standard warrant expressly denies to the agent the right to make any other guarantee or extend or amplify the standard warranty.

FRENCH PROMOTING PLOW TEST

Entries have been received of eighteen motor plowing machines for the trials to be held at Bourges, in central France, on October 1, 2 and 3. America is represented by the French branches of the Case company and the International Harvester Co., each firm having one machine. The English competitors are two machines from the W. Foster Co. The use of a field 100 acres in extent having been secured, it will be possible for all the machines to operate at the same time. In addition to the plowing match there will be an exhibition and competition of fire-fighting appliances specially suited to agricultural requirements.

The general exhibition will comprise all types of machinery and motors applicable to agricultural purposes. A novel feature will be a motor fair based on the old-time horse fairs, in which new and second-hand motors, cars, tires and accessories will be brought in for sale and exchange among the visitors. The government is showing considerable interest in the movement, the minister of agriculture having promised to attend and distribute the prizes on the closing day.

RUSSIA HOLDING TESTS

Russia having decided to make extensive purchases of motor trucks for army transport services, is holding a series of practical tests on the same lines as the recent French army trials. The country having practically no motor resources has made an appeal to foreign nations, with a special request that French firms should compete. The result is that Panhard-Levassor, de Dion-Bouton, Saurer, La Buire, Renault, Delahaye, Latil, Bayard-Clement, Berliet and Schneider have each sent various types of 1½ and 3-ton trucks to compete in the trials from September 17 to 30. The start of the tour was from St. Petersburg last Tuesday, running to Novgorod, Krestzy, Moscow and Vladimir, and return by the same route to St. Petersburg. It is understood that all vehicles coming through the trials in a satisfactory manner will be purchased outright by the Russian army.

FRENCH ARMY TRUCKS ACCEPTED

Out of the sixty-six motor trucks having competed in the recent French army trials, forty have been declared to have satisfied all requirements and the models which they represent will be accepted as approved subsidized types in conformity with the usual regulations. The successful firms with the number of approved trucks are: Schneider, two; Panhard-Levassor, four; La Buire, two; Aries, two; Delaugere-Clayette, two; Clement-Bayard, two; Front-drive Latil, four; Saurer, six; de Dion-Bouton, two; Berliet, eight; Motobloc, two, and Renault, four.

COMPETE WITH TROLLEY FREIGHT

According to Superintendent N. H. Brown of the Worcester and Southbridge, Mass., electric car line, freighting by motor trucks has reached a point where it is not only practical but can be done low enough to compete with steam railroads and trolley lines. He says:

"While it will be some time before

motor trucks will be able to haul as cheaply as the trolly express on its through lines, yet we find that the trucks already offer some competition from the fact that they are able to call for the goods at the wholesalers and then deliver it at the door of the retailer or consumer. This saves the cartage at both ends which we are unable to do. Already we find that considerable express business is done through the western part of our run by the motor trucks from Springfield, and in some cases the business in these has progressed to such an extent that a regular schedule is maintained. While the trolley express will have its own field for a long time to come, yet the progress that has been made in motor building and the effect it has on transportation shows that no person can conduct business today without constantly changing front to keep pace with the times.''

STUDEBAKER USED BY CHICAGO SAW-SHARPENER

MOTOR ROLLERS USED IN ENGLAND

On many of the race courses, polo grounds, golf links, cricket grounds, etc., of England, the rolling of the grass or lawns is today performed by motor appliances. Newmarket Heath, Lord's cricket ground, the Stoke Poges golf course, the ground of the Kingsclere racing stables, for instance, all rely upon motor rollers. Governments, corporations and county councils are using them for road making. Dukes and earls and large owners of other classes are using them for estate work. And all these machines have been produced by one firm, Barford & Perkins, Peterborough, an old firm of specialists in this class of work.

The weights vary from 3 to 11 tons. The machine is a combination of water ballast roller with a motor of the class used in heavy motor vehicles. The rear roller is made of hard-cast metal of ample strength, and the smallest size holds about ½ ton of water. The outside edges of this and of the front rollers are well rounded off. The channel iron frame is stiffly braced together, the forepart being coupled to the front rollers by a patent spring steering head and bridge. Springs also are used over the rear axle to minimize vibration and strain on the frame. The shafts are all of best quality mild steel.

The motor is of heavy design, running at a moderate speed. A sufficient body of water is carried in the circulating tank to enable the cooling to be efficiently done without the aid of a fan or pump. The tank or gilled radiator is placed over the rear roller, so that its weight is in a useful position, while at the same time its height renders a pump unnecessary, the circulation being automatic. A leather-faced cone clutch transmits the power to the gearbox, and two speeds, either forward or backward, are arranged for, usually 1 mile and 3 miles an hour, the change being conveniently made from the driver's seat. The final transmission is by chain to a large sprocket on the hind roller. The steering is easy, the hand wheel being connected by means of a chain to the steering head before mentioned, and the bridge spanning the front rollers allowing a considerable oscillation of the rollers, when passing over stones or other obstructions, without affecting the level of the main frame.

MOTOR ROLLER USED IN ENGLAND

SARATOGA FIGURES COST

Fire Chief E. J. Shadwick of the Saratoga, N. Y., department states that during the past year his new motor fire truck cost the city $28.76 for maintenance, while the horse-drawn vehicle in the same house cost $1,570.22. In the latter instance the apparatus itself was an expense of $590.22, but the services of an additional man cost $780 for the year. Then the old horses had to be substituted by a new pair which cost $200.

ALCO TRUCK REACHES RENO

On the lase leg of its journey from Philadelphia to the Pacific coast the Alco truck that is making the first coast to coast delivery of merchandise on record arrived at Reno, Nev., with the mileage figures boosted to 3,753. In reaching Fallon, Nev., the crew found it necessary to blast rocks because of the narrow roads, wide enough in places only for touring cars. At Eureka the truck left the road close to the railroad track and made its way for 70 miles across country through narrow winding mountain passes to Austin. For the greater part of the day the crew drove into the teeth of a blinding snowstorm that obliterated the road and in some places turned the going into slippery mire. Twenty per cent grades were common.

Before the truck delivers its consignment the plans call for presenting a letter of greetings at the capitol in Sacramento from Govenor Tener of Pennsylvania to Governor Johnson of California.

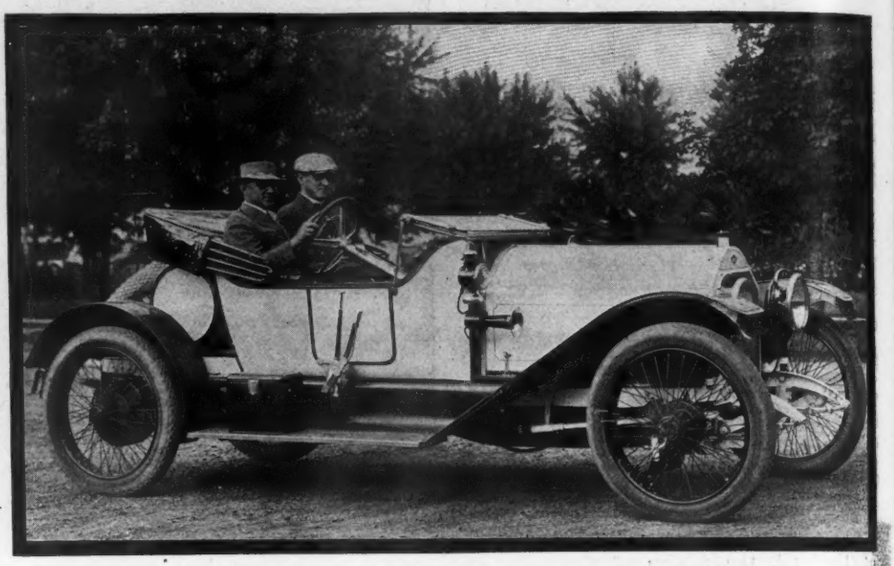
Among the Makers

WHAT becomes of the waste metal accumulated daily in the machine shops of the big motor car factories of the land? Where does it go to? Is it a total loss to the firm? How much of it is there? Questions like these were asked by a visitor at the Ford plant in Detroit as he was being shown through the maze of machines. The visitor noticed the scrap boxes near some machines and the pans under others that were filling, being emptied, and refilling with tiny bits of steel, brass or cast iron as the case might be.

The sight of so much seeming waste aroused the investigative propensities of the visitor and he plied his guide with questions. The guide's explanation was something like this: He told the visitor that what seemed to be waste really isn't waste at all. It is worked over again and made into good material.

After telling how the waste from each machine is collected at one end of the factory, he pointed to a man at work apparently playing in a big pile of steel and brass machinings. But the guest soon discovered the man wasn't wasting his time. In his hand he had a large magnet which he kept dragging through the machinings. It was explained to the guest that this is the method of separating the steel from the brass, the steel being caught and held by the magnet, but the brass not noticing in the least the influence of the magnet pull. If there is the least bit of brass in the steel machinings it renders the latter almost useless for salable purposes.

Then the guest was taken to where the steel borings were pressed and baled as if in a paper baler. Next he watched the huge crane lift the bales of borings and the boxes of other machinings onto freight cars on which they are hauled away. The guide told the visitor that this factory sends out about ten carloads of steel turnings, and three carloads of cast iron borings each month. The amount of brass waste totals about 1 ton per day in the Ford factory alone. The steel turnings are sold to the big steel mills at Pittsburgh. At the mills the turnings are melted in the cupolas and again molded into steel bars. The same thing happens to the brass waste. It is sold back to the firm from which it came and is re-smelted into brass ingots. Most of the big factories melt over their own cast-iron waste. This waste—which is not waste at all—totals into the millions each year, for the Detroit factories alone.



STUTZ 1913 ROADSTER EQUIPPED WITH McCUE WIRE WHEELS

SEIBERLING Quits Apperson—The resignation of Al G. Seiberling as secretary and treasurer of the Apperson Brothers' Automobile Co., of Kokomo, Ind., has been announced.

Kurtschora Makes Investment—Martin W. Kurtschora, for many years manager of the Beaver Mfg. Co., motors, Milwaukee, Wis., has purchased the controlling interest in the Northwestern Storage Battery Co., of Milwaukee, manufacturing accumulators, electric lighting systems, lamps, etc. Mr. Kurtschora will assume the active management. Officers of the re-organized company are: President, Martin W. Kurtschora; vice-president, E. D. McLaughlin; secretary, F. F. Scudder; treasurer, William Jacobs. The new management is outlining a policy of immediate expansion.

Pawlett Resigns—Louis M. Pawlett has resigned as executive engineer for the Locomobile Co. of America and will become a consulting engineer with offices at 1786 Broadway, New York city.

New Gramm Plant Starts—Friday, the 13th, has no terrors for the new Gramm-Berstein Co. management at Lima, Ohio, as the first wheel in the new plant was turned on that morning, and the manufacture and assembling of motor trucks in the new factory was begun. B. A. Gramm stated that 250 motor trucks will be turned out by the plant within the next 6 months.

Putting Up New Machine Shop—The Pierce Motor Co., of Racine, Wis., the motor car division of the J. I. Case Threshing Machine Co., and manufacturing Case cars, is building a new machine shop and assembling building, four stories high, 130 by 80 feet in size. The new building is situated between the present motor car works and the $1,000,000 foundry plant now under construction for the Case company at Lakeside, Racine.

Canadians Invading U. S.—So great has been the growth of the tire market in the dominion that it now is stated on good authority that the Canadian Rubber Co. contemplates erecting a large factory in the United States for the exclusive manufacture of tires. The factory of the Canadian Rubber Co. in Montreal has been found insufficient to supply the demand, and for a short time has not been turning out tires in such large quantities as formerly. However, with the erection of a fine new plant on the American side, the Canadian Rubber Co. intend to make a special line of tires and market them in the United States.

Berth for Fitzsimmons—C. P. Hatter, assistant sales manager of the Velie Motor Vehicle Co., has resigned and is succeeded by George Fitzsimmons, formerly with the Thomas factory at Detroit.

New Industry in St. Joe—Articles of incorporation have been filed by the Wizard Mfg. Co., of St. Joseph, Mich., which is organized for the purpose of manufacturing and selling carbureters and other motor vehicle accessories. Frank A. Sharpneck and Thomas Robinson, of Chicago, and Gerald C. McDowell, of St. Joseph, are the incorporators.

Boston Booming Shows—Plans are now being whipped into shape for the annual motor shows in Boston. There already are enough applications for space to fill the hall. The show this season begins a week later than in the past, starting March 8. Many applications have been made for membership in the organization, but these will not be considered until after the show is over. The Commercial Vehicle Dealers' Association held a meeting to consider show matters, too, for many of them are members of the pleasure car association, and they act jointly on such matters. The resignation of Christopher F. Whitney as president was accepted, he having retired from the motor business. The directors chose Josiah S. Hathaway, manager of the Boston branch of the White Co., and the vice-president of the other association, to fill the vacancy. The applications for space at the show next March are more numerous than last year and in number and total of vehicles the exhibition will be

and Dealers

much larger. The electric show which starts early in October in Boston is to have a special section devoted exclusively for electric motor vehicles, both pleasure and commercial.

Another Velie Building—The Velie Motor Vehicle Co., of Moline, Ill., is to erect a $15,000 road repair and test building south of the present factory shop. The new building will be 80 by 200 feet in dimensions and will be modern in construction throughout.

Stoddard-Dayton Outing—One hundred of the officials, department heads and clerks of the Dayton Motor Car Co., of Dayton, Ohio, enjoyed an outing at Olt's park last Saturday. Dinner was served at 1 o'clock, after which an athletic program was inaugurated. Cricket matches, baseball games, running races and a tug of war were included in the program.

California's Big Business—California took delivery on 34,110 cars during the fiscal year, which closed August 31. These figures are issued by the secretary of state as the number of motor cars registered during the 12 months period, and places California near the top of the list. That the motor car industry is growing by leaps and bounds is attested by the fact that during the 1910-11 season but 15,905 cars were registered at Sacremento, giving the season just closed an increase of 8,205 cars. This is greatly in excess of 50 per cent of the former total and represents the actual gain in a single year. The Studebaker had 5,653 registered. Next in point of popularity came the Ford, with 3,453.

Swinehart Factory for St. Louis—It is announced in St. Louis by J. A. Swinehart, of Akron, Ohio, that a factory and distributing station for Swinehart tires would be established in that city. The capital of $500,000 for the new enterprise was raised among St. Louisans, except that supplied by Swinehart. Arrangements have been completed for a building in the central part of the city near motor row. Philo said that the causes that led to the establishment of the factory at St. Louis were the cheap electric power to come from Keokuk dam, the attractive labor conditions, the low cost of coal, the excellent water supply and the advantages for a distributing point. He said the value of the annual output of the new factory would be $1,000,000. He declared that the raw materials could be brought to St. Louis as cheaply as they could to Akron and that when the Panama canal was opened St. Louis would enjoy an advantage over any eastern location. Rubber mostly comes from South America and Africa, and with the opening of the canal could be laid down in St. Louis on attractive terms. The new company will feature two products besides making the full line of solid and pneumatic tires and inner tubes. The Krots tire, a solid tire for light delivery wagons and electric broughams, will be one of the tires featured.

Porter Selects Assistants—Sales Manager J. D. Porter of the Garford company has removed his headquarters from Toledo to Elyria, where he is organizing his staff to take care of the much larger production for the ensuing year. H. G. Fitch, who has been assistant general manager of the Overland plant at Indianapolis, has been transferred to Elyria as general manager of the Garford company.

Not Going to Rochester—The report recently published that John H. Valentine, who recently withdrew from the Chalmers agency in Syracuse, N. Y., would remove to Rochester, where he was said to have become identified with a motor truck business, proves to be untrue. Mr. Valentine's business plans involve a continued residence in Syracuse and will be announced shortly.

Value of Ford Output—The Ford Motor Co. announces that the business for 1912 reached a total of $50,000,000, which was but $9,000,000 less than the value of the entire car output of Detroit in 1909. During the 11 months from October 1, 1911, to September 1, 1912, this company loaded and sent out 12,063 freight cars. The company built 75,000 cars during these months.

Drawbacks Allowed—Under a ruling of the treasury department at Washington, a drawback of duties will be allowed under section 25 of the tariff act of 1909 on gears imported in the rough and finished by grinding and polishing by the Gear Grinding Machine Co., of Detroit. The treasury department at Washington has authorized the allowance of drawback under section 25 of the tariff act on motor car castings manufactured by the Sherwood Brass Works, of Detroit, and exported as such or as parts of motor cars, such castings being manufactured from imported aluminum.

Prospects in Twin Cities—With Twin City bank clearings breaking all records and grain being received at the Minneapolis terminals ahead of record, motor car dealers are expecting to share in the general northwestern crop prosperity. President Howard Elliott returned from an inspection west to the coast over the Northern Pacific Railroad, says that business and crop conditions are excellent, and that the outlook is better than in years.

Franklin Sales Report—The record of Franklin dealers during the past selling year, which closed on August 31, shows a steady increase according to a report from the office of the Franklin Automobile Co. For January, 1912, sales were 86 per cent over sales for the corresponding month last year; for February 100 per cent, etc. July and August, the "dull summer months," showed an increase of 435 per cent and 330 per cent, respectively.

Overland Adding to Plant—The list of contemplated additions to the Willys-Overland factory in Toledo was increased last week when work was started on a two-story factory building to be used as an addition to the present plant. The addition will be 40 by 60 by 39 feet, and will cost $8,000. The additions now planned for this mammoth concern will cost several hundred thousand dollars and work is being pushed as rapidly as possible so that the buildings may be completed before the arrival of winter. Four of the largest buildings are being made considerably larger. Additions are being made to the final assemblying room, the main factory building, the forging plant, and the shipping rooms and the railroad docks. Railroad docks of this plant will be more than doubled in size and will be uniquely commodious and modern when completed. At present but three cars can be loaded in a day.

TRANSCONTINENTAL TRUCK ENCOUNTERS CAVE-IN ON ROAD NEAR WELLS, NEV.

Current Motor Car Patents

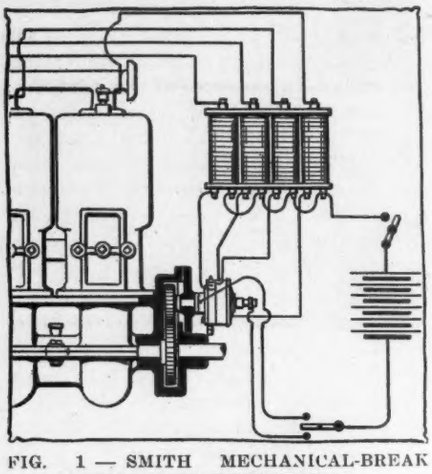


FIG. 1 — SMITH MECHANICAL-BREAK TIMER AND DISTRIBUTOR

PATENTS ISSUED SEPTEMBER 10, 1912

1,037,847—Vehicle Wheel. William Arnold, New York, N. Y. Filed March 3, 1910. Serial No. 547,036.

1,037,868 — Internal Combustion Engine. Robert W. Coffee, Richmond, Va., assignor to Lewis M. Keizer, Baltimore, Md. Filed July 13, 1907. Serial No. 383,667.

1,037,869—Transmission Mechanism. John G. Coleridge, Detroit, Mich., assignor to Coleridge Commercial Car Co., Detroit, Mich., a corporation of Michigan. Filed March 30, 1911. Serial No. 617,898.

1,037,874—Lifting Jack. Charles L. Crabb, Peapack, N. J., assignor to Topping Brothers, New York, N. Y., a corporation of New York. Filed June 6, 1910. Serial No. 565,172. Renewed February 2, 1912. Serial No. 675,048.

1,037,875—Road Cutter and the Like. Lee D. Craig, San Francisco, Cal., assignor to National Trenching Machine Co., Washington, D. C., a corporation of Delaware. Filed December 14, 1909. Serial No. 533,063. Renewed February 3, 1912. Serial No. 675,340.

1,037,908—Attachment for Vehicles. Charles H. Herman, Medford, Ore. Filed March 20, 1912. Serial No. 685,043.

1,037,924—Motor Car Jack. Charles Edmund Kells, Jr., New Orleans, La. Filed October 23, 1911. Serial No. 656,102.

1,037,937—Regulating Device for Motor Cars. Christian Lebherz, Oberstenfeld, Germany. Filed January 19, 1912. Serial No. 672,459.

1,037,949—Resilient Wheel. Marius Mathiesen, San Antonio, Tex. Filed October 4, 1911. Serial No. 652,865.

1,037,954—Tire Puncture Finder. Francis Miller, Bellevue, Ky. Filed January 23, 1912. Serial No. 672,979.

1,037,955—Tire Puncture Finder. Francis Miller, Bellevue, Ky. Filed April 1, 1912. Serial No. 687,640.

1,037,961—Reversible Motor Car Lamp. George F. Minhinnett, Blooming Grove, Tex. Filed March 21, 1911. Serial No. 615,955.

1,037,984—Guide Map. Robert Reid, Victoria, B. C., Canada. Filed January 10, 1912. Serial No. 670,480.

1,037,993—Carbureter. George W. Romans, Los Angeles, Cal. Filed January 19, 1911. Serial No. 603,459.

1,038,016—Magnetic Speedometer. John K. Stewart, Chicago, Ill. Filed July 5, 1911. Serial No. 636,896.

1,038,033—Clutch. Adolph Fred Walther, Oakland, Cal. Filed December 4, 1911. Serial No. 663,890.

1,038,040—Carbureter. Arthur J. Weiss, West Orange, N. J., assignor by mesne assignments to Maxi Co., a corporation of New York. Filed January 25, 1912. Serial No. 673,377.

1,038,047—Multiple Disk Gearing. Charles O. Wetherbee, Bath, Me., assignor to George Westinghouse, Pittsburgh, Pa. Filed December 27, 1909. Serial No. 535,194.

1,038,050—Carbureter. Donald R. Wills, Cincinnati, Ohio, assignor of one-half to Adolph Klein, Cincinnati, Ohio. Filed April 17, 1911. Serial No. 621,509.

1,038,054—Motor Car Vehicle. Lewis Wolf, McNabb, Ill. Filed April 1, 1912. Serial No. 687,787.

1,038,092—Cooling Device for Pneumatic Tires. Andrew B. Craig, Tarkio, Mo. Filed January 31, 1912. Serial No. 674,489.

1,038,114—Traction Engine. Noah R. Getz, and Rohrer Getz, Manheim township, Lancaster County, Pa. Filed October 23, 1909. Serial No. 524,155.

1,038,132—Starter for Engines. John C. Henderson, San Francisco, Cal. Filed June 29, 1910. Serial No. 569,515.

1,038,143—Clincher Tire and Securing Lug Therefor. Miller Reese Hutchison, Summit, N. J. Filed November 20, 1908. Serial No. 463,695.

1,038,144—Rim and Tire for Vehicle Wheels. Miller Reese Hutchison, Summit, N. J. Filed July 28, 1909. Serial No. 510,134.

1,038,162—Low Hung Motor Truck. Solomon J. Levy, San Francisco, Cal. Filed April 6, 1911. Serial No. 619,275.

1,038,235—Tire. Marcellino Toso, San Bruno, Cal., assignor of forty one-hundredths to Paul H. Patterson, San Francisco, Cal. Filed August 29, 1911. Serial No. 646,569.

1,038,238—Cylinder and Piston Construction for Internal Combustion Engines. Walter M. Upchurch, Hurley, N. M. Filed October 23, 1911. Serial No. 656,137.

1,038,262—Carbureter. Mortimer Reynolds Anstice, Rochester, N. Y. Filed January 9, 1911. Serial No. 601,749.

1,038,286 — Engine Starter. Edward M. Card, Bridgeport, Conn. Filed September 5, 1911. Serial No. 647,487.

1,038,300—Combined Vaporizer and Priming Pump. Francis G. Crone, Buffalo, N. Y. Filed March 24, 1911. Serial No. 616,612.

1,038,309—Motor Car Turn Table. Albert Delamore, Los Angeles, Cal. Filed April 16, 1912. Serial No. 691,246.

1,038,314—Pneumatic Tire. Frank Doherty and William John Robbins, Wellington, New Zealand. Filed June 7, 1910. Serial No. 565,622.

1,038,319—Rotary Valve for Internal Combustion Engines. Eleuthere Paul du Pont, Montchanin, Del. Filed May 13, 1910. Serial No. 561,038.

1,038,344—Tire Boot Holder. Webster D. Gilbert, Johnstown, N. Y. Filed May 11, 1912. Serial No. 696,619.

1,038,360—Tire Protector. Rhoda C. Harris, Pittsburgh, Pa. Filed October 25, 1911. Serial No. 656,738.

1,038,371 — Reversible Two-Cycle Engine. Charles Hull, Bloomville, Ohio. Filed August 8, 1911. Serial No. 642,914.

1,038,372—Detachable Rim for Vehicle Wheels. Miller Reese Hutchison, Summit, N. J. Filed April 29, 1909. Serial No. 492,926. Renewed July 20, 1912. Serial No. 710,696.

1,038,374—Combined Air Compressor and Shock Absorber. Joseph D. Jackson, Washington, Pa. Filed December 23, 1911. Serial No. 667,519.

1,038,379—Traction Engine. Marx Jess, Stickney, S. D. Filed March 22, 1911. Serial No. 616,117.

1,038,401—Starting Device for Internal Combustion Engines. Robert W. Long and George Buress, Indianapolis, Ind.: said Buress assignor to said Long. Filed August 10, 1911. Serial No. 643,461.

1,038,424—Rotary Explosive Engine. Joseph M. Novy, St. Louis, Mo. Filed September 5, 1911. Serial No. 647,753.

1,038,433—Tire Alarm. Joseph B. Polo, Clear Lake, S. D. Filed January 27, 1912. Serial No. 673,925.

1,038,446—Shock Absorber for Vehicles. Charles T. Schoen, Media, Pa. Filed March 5, 1912. Serial No. 681,860.

1,038,451—Current Distributor and Timer. James M. Smith, Philadelphia, Pa., assignor of one-half to Wilson D. Craig Wright, Philadelphia, Pa. Filed January 13, 1909. Serial No. 472,096.

1,038,494—Dynamo Electric Machine. Lewis W. Nelson, Philadelphia, Pa. Original application filed May 16, 1910. Serial No. 561,546. Divided and this application filed November 15, 1910. Serial No. 592,488.

1,038,501—Wheel. William Hallinan, Greenville, Ky. Filed August 30, 1911. Serial No. 646,873.

PATENT DESIGNS

43,015—Motor Car Hood. Ferdinand Porsche, Wiener-Neustadt, Austria-Hungary. Filed June 3, 1912. Serial No. 701,459.

FLYWHEEL Dynamo for Motor Cars—No. 1,038,494. To Lewis J. Nelson, Philadelphia, Pa. Original application filed May 16, 1910, divided, and this application filed Nov. 15, 1910, dated Sept. 10, 1912. Incorporated in the clutch assembly, in the place of the usual flywheel, this dynamo is for the purpose of generating an electric current for uses in a motor car, such as lighting, starting, etc. It consists of a direct-current dynamo, the fields of which are carried on cores, parallel to the shaft, and secured to a stationary shell, which constitutes the casing of the apparatus. The armature is in the form of a wound disk, secured to an annular plate which forms integrally one member of the clutch, and which is bolted to a cylindrical drum, which in turn is bolted to an integral flange on the shaft. To this drum is secured the commutator. The complete assembly is housed by the shell, being entirely separated from the clutch housing by a deep overlap between the revolving disk and the stationary shell,

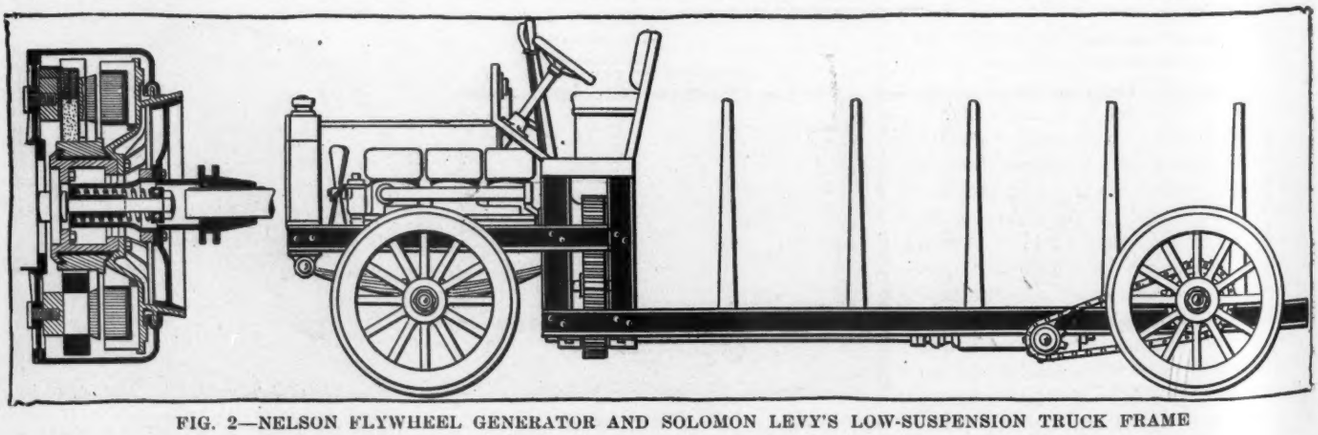


FIG. 2—NELSON FLYWHEEL GENERATOR AND SOLOMON LEVY'S LOW-SUSPENSION TRUCK FRAME

and by an additional oilproof and waterproof gland, between these members, which obviates the use of packing.

Low-Hung Motor Truck—No. 1,038,162—To Solomon J. Levy, San Francisco, Cal. Filed Apr. 6, 1911, dated Sept. 10, 1912. Partaking of the nature of both the underslung and overhung principles of suspension, this design contemplates the carrying of the load very low, thus facilitating its quick loading and unloading, and rendering the vehicle more stable. The frame, the construction of which is the feature of the patent, is hung below the rear axle and above the front axle, being composed of two sections, one lower than the other, their junction being made by two vertical members at the forward end of the truck body, which extend upward to support the seat, and encloses a gearing mechanism which conducts the power from the shaft of the engine, which is supported by the forward portion of the frame, to the driveshaft, which is below the underslung rear portion of the frame. The design shows final drive by means of double chains. The floor of the truck is carried directly over the frame members.

Ignition Timer and Distributor—No. 1,038,451.—To James M. Smith, Philadelphia, Pa., assignor of one-half to Wilson D. Craig Wright, Philadelphia, Pa. Filed Jan. 13, 1909, dated Sept. 10, 1912. As a part of a mechanical-break, jump-spark system, the timer and distributor, to which this patent relates, comprises a distributing disk and revolving arbor, suitably insulated by non-electric disk, provided with a metal pivot, upon which a contact making and breaking device is mounted. This consists of a pair of pivoted arms, one of which moves into and out of contact with a contact screw, mounted on the supporting member of the insulating element, and which are actuated by a serrated disk and sleeve mechanism adapted to make a positive mechanical contact of short duration. Another similar device is used to make a long contact of long duration, for starting.

Graphic Road Map—No. 1,037,984—To Robert Reid, Victoria, B. C. Filed Jan. 10, 1912, dated Sept. 10, 1912. This patent relates to a method of making guide maps. One side of the sheet is provided with a tabulated list of all of the towns shown on the map on the reverse side of the sheet. These tabulations are two in number, comprising two separate sets of names. The location of the points listed on the face of the map is determined by means of key numbers and letters, a designation for each name, to correspond with the position o fthe point on the map, similarly marked. The numbers and letters are arranged for ready location on the face of the map, and listed alphabetically in the tabulated key on the revrse side. To locate a given town, therefore, on the map, the name is first found in the table, and the designation thereof with respect to the key noted. The map is then reversed, and the letter or number located in its numerical or alphabetical position on the map. Unspecified means are also set forth in the claims to locate a required point on the map from the back, marking it for reference on the front.

Stewart Magnetic Speedometer—No. 1,038,016.—To John K. Stewart, Chicago, Ill. Filed July 5, 1911, dated Sept. 10, 1912. This speedometer operates on the magnetic drag principle, the principal elements comprising a revolving magnet, geared to the driveshaft, encompassed by an oscillating, non-magnetic member, in form an inverted cup, whose oscillation, as induced by the magnetic drag of the revolving magnet, is restricted by a hair spring. Reading is by means of calibrations on the face of the non-magnetic field piece through an index opening in the dial face. The features of the invention are the means of adjusting these members. The non-magnetic element is mounted on a frame which is adapted to be moved axially to alter its relation to the magnet, and the degree of effect produced thereby; and an adjustment between the scale of calibrations on the oscillating cup and the index opening, for the purpose of correcting the accuracy of the instrument.

Friction-Drive Mechanism—No. 1,037,869.—To John G. Coleridge, Detroit, Mich, assignor to Coleridge Commercial Car Co., Detroit, Mich. Filed Mar. 30, 1911, dated Sept. 10, 1912. Applied to a motor truck, otherwise substantially standard, this provides a friction drive at all reductions and reverse gears, and a direct drive on high speed. The engine shaft is separated from the drive shaft amidships, by a clutch, engagement of which provides direct drive. Between the clutch and the flywheel are two silent-chain drives, driving two countershafts, parallel to the drive shaft, which in turn drive, through bevel gears, a pair of opposed friction disks, mounted behind the clutch, between two cross members of the frame. A friction wheel, keyed to the driven shaft, and adapted to slide upon it longitudinally, engages on opposite points on its periphery with these disks, at a ratio of rotating speed proportional to the distance from their centers of the point of contact, reverse being obtained by moving the friction wheel past the center of the disks. The control of the two friction members is co-acting, the release of the friction disk-and-wheel engagement operating the direct-drive clutch, a neutral between the two being provided.

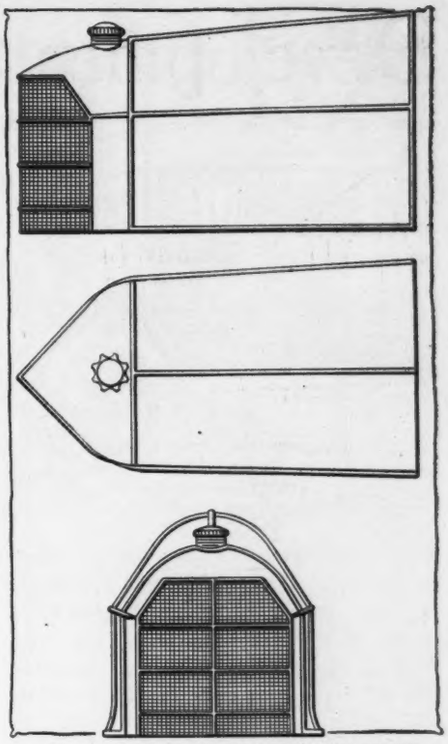


FIG. 4—GERMAN STREAM-LINE HOOD

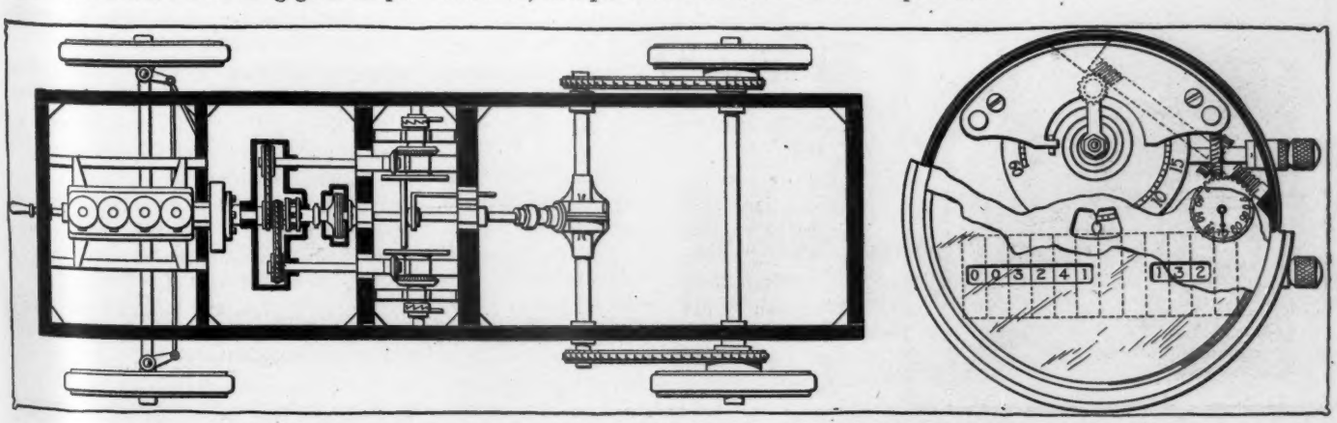


FIG. 3—COLERIDGE DIRECT DRIVE FRICTION CHANGE-GEAR AND STEWART MAGNETIC SPEEDOMETER

Development Briefs in Accessory Field

New Pleated Curtains Appear—Weston-Mott Produces New Pressed Steel Rear Axles—New Dope for Fuel—Strength of Bair Top Hinges Proven by Big Top

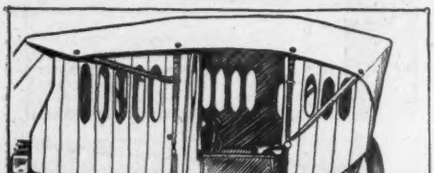


FIG. 1—APPALAS FOLDING SIDE CURTAINS

New Weston-Mott Axles

TWO new pressed steel axles have been designed by the Weston Mott Co., Flint, Mich. They are made with the split in the vertical plane. A flange is turned up on the ends of the tube, to which the pressed steel brake flange is spot-welded. The hub bearings are supported in tubes inserted and fastened in the ends of the housing, acting also as reinforcements. The shafts are turned large at the wheels, tapering toward the inner ends to prevent crystallization, and are carefully heat-treated. Single-bearing hubs are used and specially cut, 14½ size gears. New Departure bearings are used, and the axle is designed with especial attention to ease of adjustment.

Herroline Gasoline Improver

William H. Herron is the discoverer of a substance for the improvement of gasoline for power purposes that is in many ways unique. The Improved Gasoline and Oil Co., Chicago, is the compounder. This compound is a liquid, similar in appearance to gasoline, claimed to be beneficial to gasoline, and harmless to machinery. It is claimed to prevent carbon deposits, to economize in gasoline, to facilitate starting, to make the engine more flexible, to lessen smoke and odor, and to reduce the freezing point, permitting the car to be started in lower temperatures than with the use of pure gasoline.

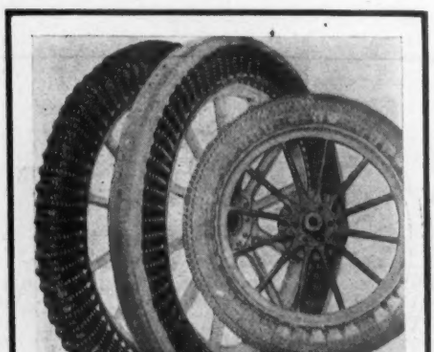


FIG. 2—BURGESS METALLIC TIRE

The theory of its action is that Herroline, being 40 degrees higher in temperature than gasoline at all times, raises the temperature of the treated fluid; that Herroline refines the gasoline, making it more volatile, causing it to vaporize more quickly; and to go farther.

The reason for the higher temperature of Herroline under certain conditions than gasoline under similar conditions, is that Herroline evaporates much slower than gasoline. This seems strange, as the average layman is apt to consider the temperature of a liquid dependent on the surrounding air; yet if any liquid be tested by the aid of a thermometer, it will be found cooler than the atmosphere, due to the radiation of its heat into the surrounding atmosphere as induced by evaporation. The greater the rate of evaporation, the greater the radiation and consequent lowering of the temperature of the liquid. It would appear from this, then, that this substance would rather retard the vaporization of gasoline than accelerate it; but this is not the case, for the reason that while the small amount of Herroline, being warmer than the gasoline, radiates its heat to the latter, warming it, the amount of the adulterant is not sufficient to materially affect the volatile properties of the fuel, and by its own radiation, as induced by the lower temperature of the gasoline, is rendered, itself, more volatile, so that the whole mass, being warmer than an equal portion of gasoline, is rendered more volatile, in accordance with the principle of the increase of the rate of evaporation of liquids under the influence of heat.

It is asserted that gasoline treated at the proportion of two teaspoonfuls of Herroline to the gallon, will be raised 35 degrees in temperature; that one gallon of Herroline will suffice for 200 gallons of gasoline; that its effect is permanent; that the fuel required to run the engine is reduced 50 per cent by such treatment; and that while its use increases the cost of fuel 2½ cents per gallon, gratifying economy is effected. Chemical analysis fails to reveal any change in the nature of the gasoline thus treated, it is averred.

New Sliding Curtains

Accordion pleats seem to be the style, at least in top curtains, as is evidenced in the Applas Inside Curtain, the product of the Applas Curtain Co., Detroit, Mich., which is the latest development of the concertina effect in side-curtains. These curtains are made in folding sections, which are hung on a nickel-plated rod, disposed between the bows of an extension top, by small metal rings. This construction permits them to be slid back against the sides of the top bows, to permit ingress or egress from the doors, or to fold them out of the way, the rods upon which they slide clamping them securely under the bow overhead and invisible, when not in use. These curtains need never be removed from the top, as they consume a negligible amount of space when folded, do not materially detract from the appearance of the car, and may be folded back with the top, wtihout removal. They are placed inside of the bows in the latest approved manner, and may be adjusted instantly from either inside or outside of the car, or while the car is in motion. The celluloid windows are sectional, each section being of small size, and proof against cracking. Fig. 1 shows these curtains in place, one section being open.

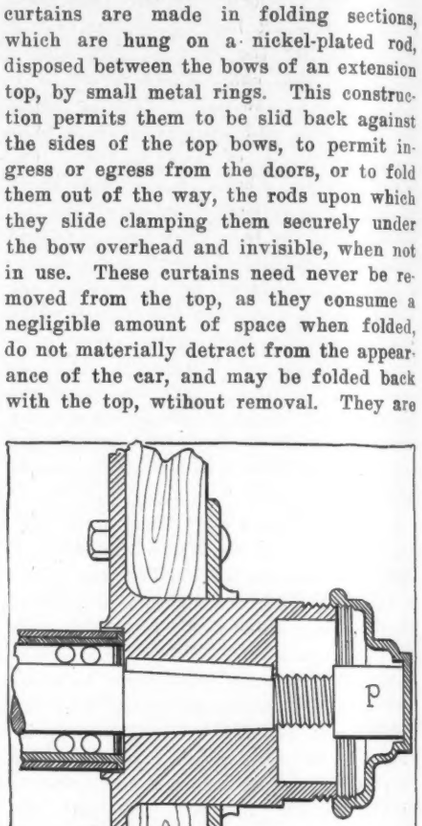


FIG. 3—NEWTON WHEEL PULLER

Strength of Bow Hinges Demonstrated.

Equipped with Bair bow hinges, the White car, Fig. 6, is shown with the largest folding top ever constructed. This car, which has a wheel base of 159¾ inches, and seats ten people, requires a top 152 inches in length. For this great spread eight bows are used, which are supported in but five bow sockets. These are of Bair manufacture, and permit two bows to be hinged at an angle of 75 degrees. This is but an elaboration of the principle used in tops of more moderate size, as employed in standard five and seven passenger cars, which enables the latter sizes to use six

Novelties for Use of the Motoring Public

Wheel-Puller of Extreme Simplicity—Wire Hinges Take the Place of Belt Lacing—Built-up Resilient Tire Uses Steel Springs—Shock Absorber Maker Produces Plug

bows with but four sockets. This allows the top to fold into a very compact unit, and greatly improves the appearance, both folded and extended. The top shown in the illustration folds to a size practically no larger than the ordinary top of smaller size. The hardware that makes this possible is manufactured by the Auto Specialties Mfg. Co., Chicago.

Simple Wheel Puller

Requiring no additional appliances to the usual parts of a wheel, with the exception of a small brass cylindrical plug, the wheel puller shown in Fig. 3 is perhaps the simplest device of this character yet introduced. Of course, it does not contemplate pulling wheels that are bound so tight as to require unusual methods of extraction, being designed for use with ordinary non-floating or semi-floating rear axle wheels. The device consists of a special construction of the hub cap, wherein it is adapted to receive the brass filler plug, P between itself and the axle end. A few light taps on the end of the cap with the hammer suffice to start the wheel, by concussion, the wheel being drawn from the axle thereafter by screwing up the hub cap. The filler plug is carried in the tool box when not in use.

C. H. Newton, East Orange, N. J., is the designer of the device.

Conn's Belt Hinges

For flat fan belts, the belt hinge shown in Fig. 4, is a very successful substitute for belt lacing. They are composed of sharp wire clinches, turned once each about a hollow tube, and are applied as shown. They hold the belt firmly, and in many places, and, due to the hinge action of the wires on the tube, are more flexible than is usual with metal lacings. They are made in sizes for belts from ⅝ to 1 inch in width, and require no tools other than a hammer to apply.

The operation is as follows: The hinge members are spread, is in the figure, and laid on an iron block. Each belt end is then inserted between the points of one of the sets of clinches and driven in with a dent, as shown. When these dents are flattened out, the points will clinch.. J. C. Conn, New York City, is the manufacturer of three sizes of these hinges.

Burgess Spring Tire

Using springs for the resilient element, the Burgess patent tire, shown in three stages of manufacture in Fig. 2, is the product of the Burgess Tire and Mfg. Co., Brookfield, Mo. The method of employing the spring is new. They are helical in form, and are secured at each end to the opposite sides of the rim, arching up to form the tire, in substantially the same form as a pneumatic tire. There are seventy-four of these springs to a 30-inch tire, being equally spaced about its entire circumference. This forms the core of the tire, and is underlayed first by a tread base or binder of chrome leather, which is disposed about the tread surfaces of the springs, with leather keys in the interstices between them, to keep them properly spaced. Over this is then stretched a canvas envelope, which completely encloses the assembly, excluding dust and water. Over this a detachable steel studded leather tread is placed, which may be replaced by a new one when worn, wtihout disturbing the core assembly. It is averred by the

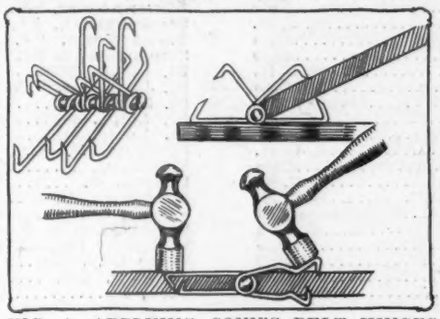


FIG. 4—APPLYING CONN'S BELT HINGES

manufacturers that this tire will respond to 3 pounds pressure. It is the intention of the makers to guarantee a mileage of 17,000 miles.

Hartford Two-Piece Plug

Newest among the separable type of spark plugs, the Hartford two-piece plug, Fig. 5, is the latest product of the Hartford Suspension Co., Jersey City, N. J., maker of Truffault-Hartford shock absorbers and the Hartford jack. In this plug the main shell acts merely as an adapter, permanently screwed into the

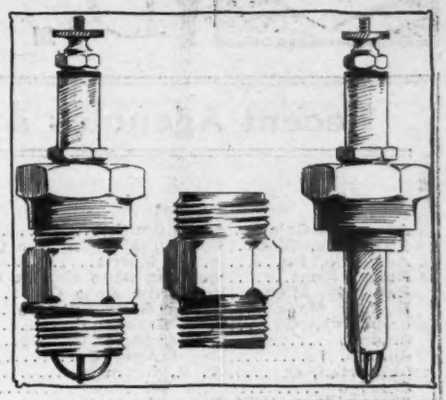


FIG. 5—HARTFORD 2-PIECE PLUG

cylinder, into which the core is screwed on a taper thread, the core being an entirely separate and self-contained unit. Once applied, the shell, which is furnished in A. L. A. M. standard threads with a copper-asbestos gasket, never need be removed from the cylinder, as all adjustments, cleaning and renewals on the core may be made by separating it from the shell. The core is threaded over the shell on a taper, making gaskets here unnecessary; the cylinder threads being straight.

The taper thread makes the removal of the sparking element easy, and dispenses with gaskets at this point, while the straight thread in the cylinder removes the danger of cracked cylinders, due to too tight screwing of the taper thread into a cold cylinder, which is attendant upon tapered cylinder threads. The sparking gap of this plug is formed between a straight central positive electrode and a soft-iron loop, which extends from the core shell down the lower porcelain, around the central electrode. The points are easily cleaned, and well separated from the shell, so that carbon on the surface of the shell has no effect upon the sparking points.

Should a new plug be required, the old shell may be left in the cylinder, and the new core used only, with the old shell.

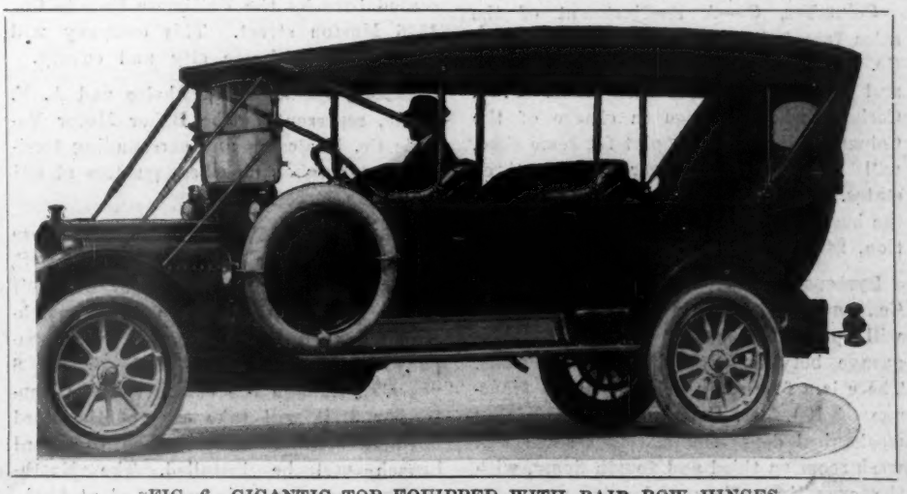


FIG. 6—GIGANTIC TOP EQUIPPED WITH BAIR BOW HINGES

Brief Business Announcements

Recent Agencies Appointed by Car and Truck Manufacturers

PLEASURE CARS

Towns—	Agent	Car
Avondale, Colo.	A. E. Smith	R. C. H.
Abberville, S. C.	Abberville Motor Car Co.	Cole
Avondale, Pa.	M. F. Morris	R. C. H.
Butte, Mont.	Montana Auto Service Co.	R. C. H.
Bay City, Mich.	Wolverine Auto Co.	Cole
Boston, Mass.	George Grow Auto Co.	R. C. H.
Columbus, Ga.	S. G. Brannon	R. C. H.
Chicago	Deibler Motor Car Co.	Great Western
Clinton, Ia.	Model Auto Co.	Cole
Coshocton, O.	W. E. Layman	R. C. H.
Chicago	John W. Hayden	Nyberg
Canandiagua, N. Y.	Claude O. Hallenbeck	R. C. H.
Demopolis, Ala.	Leon Morris	R. C. H.
Detroit, Mich.	Thompson Auto Co.	Alco
Delta, Pa.	C. F. Ramsay	Ford
Delta, Pa.	C. F. Ramsay	Buick
Delta, Pa.	C. F. Ramsay	Overland
Duluth, Minn.	Johnson Motor Co.	Cole
Erie, Pa.	Potter-Burgess Motor Co.	Cole
Elmore, O.	Henry Lohr	Empire
Ft. Wayne, Ind.	Fred H. McCullough	Cole
Galesburg, Ill.	Galesburg Machine Works	Cole
Galveston, Tex.	John Christienson & Co.	Cole
Grand Rapids, Mich.	Cowdin and Woodland	Cole
Galeton, Pa.	H. C. Shaw	R. C. H.
Hamilton, O.	F. H. Graf Motor Car Co.	Cole
Havana, Cuba	Villamil and Miller	Alco
Kensington, Minn.	Osierberg and Colmark	R. C. H.
Kansas City, Mo.	Williams Motor Car Co.	Alco
Lancaster, Pa.	H. M. Vondersmith	Hupp-Yeats
Larimore, N. D.	Larimore Auto Co.	R. C. H.
Lima, O.	Thomas Motor Car Co.	Cole
Longmont, Colo.	Timmons Auto Co.	R. C. H.
Low Point, Ill.	Banta Brothers	Cole
Lynn Center, Ill.	A. F. Anderson	R. C. H.
La Porte, Ind.	Indiana Auto & Supply Co.	R. C. H.
Milwaukee, Wis.	Edgar F. Sanger Co.	Stearns-Knight
Milwaukee, Wis.	Edgar F. Sanger Co.	Marion
Milwaukee, Wis.	Moline Garage Co.	Moline
Milwaukee, Wis.	R. D. Rockstead	Paige
Milwaukee, Wis.	R. D. Rockstead	Warren
Meridian, Miss.	A. Y. Harvey	R. C. H.
Mendota Ill.	P. F. Sondergroth	R. C. H.
Minneapolis, Minn.	Downs Co.	Alco
Monticellow, Minn.	Henry Cain	R. C. H.
Mechanicsville, N.Y.	G. M. Fort	Franklin
Manistee, Mich.	National Garage & Sales Co.	Cole
Memphis, Tenn.	Jerome P. Parker-Harris Co.	Cole
Myersdale, Pa.	Myersdale-Overland Co.	Cole
Newburg, N. Y.	Mogul Auto Co.	R. C. H.
Ottawa, Ill.	Standard Garage	R. C. H.
Oakland, Cal.	J. C. Lewis Motor Co.	Cole
Ottawa, Ill.	Ottawa Garage Co.	Cole
Pawtucket, R. I.	H. W. Bowen	Cole
Portland, Ore.	Neate and McCarthy	Cole
Railroad, Pa.	H. Schroeder	Overland
Reading, Pa.	Merchants' Auto Service Co.	Alco
Remington, Va.	Remington Motor Car Co.	R. C. H.
Rochester, N. Y.	Pawlik & McGuldwin	Alco
Rockford, Colo.	Lewis Brothers & Johnson Merc. Co.	R. C. H.
San Antonio, Tex.	Guarantee Motor Car Co.	Cole
Savannah, Ga.	J. C. Lewis Motor Co.	Cole
Sheboygan, Wis.	Rummele Garage Co.	Detroit
Sheboygan, Wis.	Sheboygan Auto & Supply Co.	Cadillac
Stevens Point, Wis.	P. F. Kosholleck	Apperson
Stevens Point, Wis.	P. F. Kosholleck	Reo
Stewartstown, Pa.	August Neller	Ford
Stewarstown, Pa.	August Neller	Buick
Stewartstown, Pa.	August Neller	Overland
St. Cloud, Minn.	George E. Guide	R. C. H.
St. Johnsville, N. Y.	B & C Auto Co.	Cole
St. Louis, Mo.	R. C. Jones	Hupp-Yeats
St. Louis, Mo.	Colonial Automobile Co.	Flanders
St. Louis, Mo.	D. Perry Lewis	Moon
Syracuse, N. Y.	Jefferson Garage Co.	Alco
Toledo, O.	Bunnell Auto Sales Co.	Cole
Urbana, O.	Prince Motor Car Co.	Cole
Vancouver, B. C.	B. C. Automobile Co., Ltd.	Cole
Visalia, Cal.	James L. Robertson	R. C. H.
Washington, D. C.	A. D. Loffler Co.	Penn
Waterloo, Ia.	Burd Auto & Supply Co.	Cole
Webb City, Mo.	C. H. Beck	R. C. H.
Whittier, Cal.	H. L. Triplett	R. C. H.
York, Pa.	South Pennsylvania Auto Co.	Apperson

TRUCKS

Australia	American Motor Truck Co.	Federal
Corsicana, Tex.	L. H. Lee	Kelly
Cumberland, Md.	Queen City Garage	Kelly
Emporia, Va.	Emporia Machine Co.	Kelly
Lynchburg, Va.	Monte Dingee	Kelly
Portsmouth, O.	David Stahler	Federal
Richmond, Va.	Shenandoah Motor Co.	Kelly
St. Louis, Mo.	Allen Baker	Federal
Toronto, Ont.	Shaw Overland Sales Co.	Gramm
Vancouver, B. C.	Vancouver Isle Motor Co.	Federal

HONEOYE, N. Y.—F. Wolfsberger is planning construction of a two-story concrete public garage.

Spokane, Wash.—W. C. Ruckert has been appointed Spokane manager of the Goodyear Tire and Rubber Co., succeeding C. B. Clement, who has joined the Studebaker agency in Portland, Ore.

Columbus, O.—A readjustment of the sales force of the United Motor-Columbus Co. in a large portion of Ohio, Kentucky and West Virginia has been made. F. P. Corbett, who has been in charge of the Columbus distributing point for some time, will be district manager of the three states. The wholesale and retail end of the business will continue in the same location, 246-248 North Fourth street.

Syracuse, N. Y.—The Jefferson Garage Co., springing from the Jefferson Auto Co., will open what is said to be the largest garage between New York and Buffalo. There is a four-story building and a frontage of 100 feet, the structure containing mechanical departments, repair shops and wash room on third and fourth floors, with the executive offices and sales rooms on the lower floors. The front is of colonial design and the interior finish is of natural woods.

Omaha, Neb.—The Cole Motor Co. of Omaha, Neb., has moved into larger quarters at 1910 Farnum street.

Baltimore, Md.—The Keeton car is now in the Baltimore field. It is being represented here by the Baltimore Garage Co., 1306 Morton street. This company will look after Baltimore city and county.

Boston, Mass.—F. N. Phelps and A. F. Neale, representing the Baker Motor Vehicle Co. in Boston and surrounding territory, have taken new headquarters at 801 Boyleston street.

Minneapolis, Minn.—The Northwestern Automobile Co., 217 Fourth street S, Minneapolis, has contracted for the Krit car in Minnesota, the Dakotas and northern Wisconsin. The Northwestern company has handled the Ford car for 8 years. Although the contract ended September 3, it will take care of the Ford business another month, when the Ford branch will be installed. The Northwestern company is incorporated at $100,000. W. E. Wheeler is president; William Eggleston is vice-president; J. R. du Sault is secretary.

Honeoye, N. Y.—F. Wolfsberger, Honeoye Falls, N. Y., is planning construction of a two-story concrete public garage.

San Francisco, Cal.—A. C. Wheelock, has been appointed assistant manager of the Pioneer Automobile Co., distributor of the Chalmers and Flanders electric in northern California. Wheelock has been associated with the Pioneer for many years, latterly as manager of their Fresno branch. He will make his headquarters in San Francisco.

Minneapolis, Minn.—The Pence Automobile Co. will commission its own exclusive automobile freight train to travel all winter between Flint, Mich, and Minneapolis, to haul 2,500 Buick cars from the factory to the northwestern distributing agency. Each freight car will carry three Buicks, which makes 150 to the train. The plan has been formulated by H. E. Pence, president, to insure enough cars for the winter's haul. The company has to guarantee the railroad 6 months'

employment for the cars. The Buicks are for distribution in Minnesota, Montana, the Dakotas and Northern Wisconsin.

Rochester, N. Y.—William Edwards has withdrawn from the firm of Edwards & Postier. The concern now is West & Postier.

Des Moines, Ia.—R. C. Fletcher, junior member of the Van Vliet-Fletcher Auto Co., local agent for the Studebaker lines, has withdrawn from the firm and will devote his entire time to real estate.

Buffalo, N. Y.—The Baker Brothers Motor Car Co., distributor for the Cole in western New York, has changed its name to the Cole Motor Co. It has moved into new salesrooms at 1227-1229 Main street.

Albany, N. Y.—The W. M. Whitney Co., which recently purchased the interests in this city of the United States Motor Co., which local concern was known as the United States Albany Co., is handling the Fiat, Maxwell and Mercer cars.

San Francisco, Cal.—The Matheson Sales Co., distributor of the Warren and Matheson cars, which heretofore has made its headquarters across the bay in Oakland, has now centered all its energies in a new building on Van Ness avenue, near Pine street.

San Francisco, Cal.—J. W. Harrison, formerly connected with the Woods electric in Chicago, has been appointed manager of the Woods electric department of the Pacific Motor Car Co., distributor of the Woods and the Stevens-Duryea in northern California.

New York—Charles E. Miller, the accessory maker and jobber, will move his branch store in Atlanta, Ga. He has leased a storeroom in a new building, nearing completion, at the corner of Harris and Peachtree streets. The new address in Atlanta will be 259 Peachtree street.

San Francisco, Cal.—Frank E. Carroll has been appointed manager of the San Francisco branch of the Goodyear Rubber and Tire Co. Carroll has been associated with the sale of Goodyear tires on the Pacific coast for several years. For some time past he has been manager of city sales in the local branch.

Detroit, Mich.—The Detroit R. C. H. Co., local sales agents for R. C. H. cars, with display rooms and offices at 1225 Woodward avenue, report that its season's business to date has been phenomenal, having placed over 150 cars in Wayne county so far this year with every indication that it will top the 200 mark before the fall season closes.

Vancouver B. C.—The new garage for the Dissette Motor Co., at 1254 Hornby street, will share with a somewhat similar building now being erected beside it, the distinction of being the largest garage on the Pacific coast, with the floors absolutely clear of posts and supports. The new structure will have a frontage of 50 feet on Hornby street and a depth of 120 feet and will be three stories high. It will be of re-inforced concrete and will be fireproof throughout.

Toronto, Ont.—The Provincial Motor, Ltd., Toronto, distributor for the Cole, has changed its name to the Cole Motor Car Co.

Seattle, Wash.—Ira D. Lundy will hereafter handle the R. C. H. cars in Seattle. This line was formerly handled by F. H. Barshar Co., which hereafter will devote all its time to selling Cole and Stevens-Duryea cars.

Philadelphia, Pa.—The F. B. Stearns Co. of Cleveland, has opened a branch house in Philadelphia, located at 449-451 North Broad street. G. Hilton Gantert has been appointed manager of the branch, with Evans Church as sales manager.

San Francisco, Cal.—C. S. Richardson, for several years manager of the Reliance Automobile Co., distributor for the Knox pleasure cars and trucks and the Detroit electric in this territory, recently resigned to take over the distribution of Punctureless in California.

San Francisco, Cal.—The Pioneer Automobile Co., of San Francisco, opened its new branch in Oakland during the past week. The new building is a spacious structure with a large frontage on Twenty-fourth street. C. A. Penfield is manager of the Oakland branch.

Kansas City, Mo.—W. F. Kneip and E. F. Williams, new Franklin dealers, have opened up a salesroom and garage at 3320-3322 Main street. Before taking up the Franklin dealership here both Mr. Kneip and Mr. Williams were for 6 years connected with the engineering department of the H. H. Franklin Mfg. Co., in Syracuse.

Rochester, N. Y.—Jacob Messner and John Swensen, proprietors of the Powers hotel, have purchased property at Plymouth avenue and Church streets, costing $17,000 for the construction of a garage for guests of the hotel. The property is 65 feet front and 150 feet in depth and the garage will be the largest in Rochester.

Des Moines, Ia.—The United Motors Des Moines Co. has announced a change in the methods of conducting its business here. In the future the retail department will be conducted entirely separate from the wholesale department and will be known as the Capital Auto Co. A. G. Bigelow, treasurer of the United Motors Des Moines Co., will be manager. G. W. Jones will continue as head of the wholesale department.

Portland, Ore.—A. S. Eldridge, a building contractor of Portland, together with Mel G. Johnson, manager of the Howard Automobile Co., of Portland, and James G. Fenton, have formed a corporation to be known as the Buick Auto Co., and have secured the agency for the Buick and National lines in western Washington. The new company have taken lease of a show room and shop room in the new Davies building on the corner of Pike and Broadway in Seattle.

College Point, N. Y.—The American Hard Rubber Co. contemplates erection to its plant of a three-story brick addition costing $30,000.

Toledo, O.—Charles P. Landman and Warren Griffith have incorporated as the Landman-Griffith Motor Co. A brick building will be erected on Madison avenue for the new firm, which will be ready for occupancy December 1.

Louisville, Ky.—The Zilio Sales Co., of Louisville, has acquired the general agency for the Zilio tire filler in Kentucky, southern Indiana, and North and South Carolina. This concern has opened an office in the Courier-Journal building in Louisville.

Toronto, Ont.—The Norwalk Motor Car Co. of Canada, corrects a statement to the effect that the Matheson Automobile Co. is the Canadian distributor of the Norwalk. A factory branch has been established here by the Norwalk company with M. D. Coltman in charge.

Atlanta, Ga.—C. E. Holmes, formerly of the Diamond Rubber Co., Goodyear Tire and Rubber Co., and the late southern manager of the Swinehart Tire and Rubber Co., has resigned his position to enter into the retail tire and vulcanizing business in Birmingham.

Oshawa, Ont.—The McLaughlin Carriage Co., of Oshawa, has taken out a permit to build an addition to its factory, two stories high, 250 feet by 60 feet. Its present manufacturing facilities are inadequate to meet the increasing demand for McLaughlin-Buick motors.

Toronto, Ont.—The Rubber Tire Wheel Co. agency, sales company here for the productions of the Gutta Percha and Rubber Mfg. Co., including Fisk and Kelly-Springfield tires, has discontinued business. The Gutta Percha will in future conduct the sales of its own products.

Portland, Ore.—Another firm made its appearance in Portland's row during the past week. The new firm is composed of F. J. Finger and H. L. Mann, recently with the Packard company, of New York. The new firm has secured the agency for the Stutz and will be located at 59-61 North Twenty-third street.

Utica, N. Y.—G. Wilmer Creswell, formerly with H. H. Cooper & Co., has purchased a half interest in the Utica Electric Garage Co., 75 Cornelia street, which concern has been conducted for past 4 years by Walter R. Shiller. The new firm will be Schiller & Creswell. The agency for the Detroit electric will be continued.

Detroit, Mich.—Andersch Brothers, fur dealers of Minneapolis, Minn., have entered the motor business as distributors of the Abbott-Detroit line in the states of Minnesota and North and South Dakota. The new concern is the Andersch Brothers Motor Co., and contract has already been let for a salesroom and headquarters at Minneapolis. George B. Levy has been

appointed general manager of the new company.

Hamilton, Ont.—The Jackson Automobile Co., Jackson, Mich., is reported to be considering the location of a Canadian branch of its factory in Bartonville, Ont.

Philadelphia, Pa.—Carroll A. Haines & Co., Baker electric distributors in Philadelphia, have moved to their new and larger sales rooms at 1927 Market street.

Kansas City, Mo.—A change in the Cole Kansas City distributing house has taken place. H. J. Clark who formerly worked for the Cole distributors in Kansas City, secures the distributing business. He is associated with J. H. Runcie, a paper box manufacturer. The firm will do business under the name of the K. C. Cole Motor Co.

Baltimore, Md.—While work is progressing on the new garage of the Colonial Motorcar Co., at North avenue near Charles street, the company has established temporary location in the Brown Taxicab Co. building. The new building will be ready for occupancy about November 1. The Colonial Garage Co. handles the Studebaker line.

Indianapolis, Ind.—With an authorized capitalization of $10,000, the Showalter Mfg. Co. has recently been reorganized and incorporated in Indianapolis. The company manufactures motor car bodies and the principal stockholders are E. W. Showalter, William Small and H. G. Showalter, who are also the directors.

Akron, O.—The Goodyear Tire and Rubber Co. moved into the new office building recently. The new structure is one of the most modern in the United States.

Dallas, Tex.—L. A. Smith, for many years with the Studebaker company in Dallas, has resigned and will enter business for himself. He has formed a partnership with G. L. McKinney, of Amarillo, Tex., and the two men will open an agency covering Hunt, Collin and Rockwell counties. They will sell the Studebaker.

San Francisco, Cal.—The Bonnheim-Moore Motor Car Co., which have secured the Henderson agency for northern California, Nevada and Hawaii, has taken quarters in the big Goodyear tire building on Van Ness avenue, at the corner of Sutter street. Bonnheim is a wealthy California merchant, and Harry G. Moore comes to San Francisco from Chicago.

San Francisco, Cal.—The Speedwell Motor Car Co. of Dayton, O., has established a branch in this city, taking over the interests of the Speedwell Motor Car Co. of California. The new branch is under the management of R. Harry Croninger, who is manager of the motor truck department of the Dayton factory. While retaining his factory position, Croninger has no definite plans for returning to Dayton.

New York—John N. Stockfisch, formerly with the Havoline Oil Co. as New York division manager, has resigned, to accept a position in a like capacity with the Texas Oil Co., 17 Battery place, New York city, manufacturer of Texaco oils.

Indianapolis, Ind.—The State Automobile Co. has taken the agency for the Marathon and will also distribute the Krit in Indiana. The company formerly had the Marathon agency, which is now distributed by the A. and M. Service and Sales Co.

Minneapolis, Minn.—A. N. Smith, formerly with A. F. Chase & Co., transfers with the Oakland car from that firm to the factory branch as sales manager. H. W. Jameson has been transferred from the Buick end to the Oakland branch. He has been traveling inspector of agencies in Montana. E. W. Shepherd will be manager of the St. Paul agency.

Cleveland, O.—F. E. Richardson has withdrawn from the firm of Richardson-Neighbors Motor Co., Cleveland, distributor for the Cole and Hupmobile. He has organized the Richardson Motor Car Co. and will be located next door to the old company. Mr. Richardson will handle the Cole lines exclusively; while Mr. Neighbors will look after the Hupmobile interests.

Recent Incorporations

Albany, N. Y.—Empire Essenkay Co.; capital stock, $10,000; agents for tire filler; incorporators, H. C. Cowen, J. W. Cumming, H. C. Wilbur.

Benton, Ill.—Benton Motor Car Co.; capital stock, $75,000; to manufacture and deal in motor cars and accessories; incorporators, H. Stetlar, W. S. Cantrell, A. H. Fraunfleder.

Beverly, Mass.—Cameron Mfg. Co.; capital stock, $300,000; to deal in motor vehicles; directors, E. S. Cameron, A. B. Emerson, H. P. Cameron.

Boston, Mass.—Puritan Motor Supply Co.; capital stock, $5,000; directors, J. G. McCormack, Jr., W. E. Hearn, R. W. Downing.

Boston, Mass.—Royal Blue Line Co.; capital stock, $100,000; to deal in motor cars; directors, W. F. Smith, C. H. Poole, C. F. Smith.

Boston, Mass.—Tyler Brothers Corp.; capital stock, $100,000; incorporators, F. J. Tyler, L. S. Tyler, J. M. Gibbs.

Brooklyn, N. Y.—Brooklyn Terminal Garage & Machine Co.; capital stock, $10,000; incorporators, D. B. Abbott, C. E. McMahon, J. D. Fackenthal.

Brooklyn, N. Y.—Haas Garage Co.; capital stock, $2,000; incorporators, L. Haas, E. Haas, Oscar Hauman.

Brooklyn, N. Y.—C. Storage Battery Co.; capital stock, $2,000; to manufacture storage batteries; incorporators, A. M. Friedenberg, R. W. Vicarey, L. Friedenberg.

Butte, Mont.—Butte Automobile Co.; capital stock, $25,000; incorporators, W. G. Hansen, M. Hansen, A. C. Kremer.

Buffalo, N. Y.—Niagara Devices Co.; capital stock, $100,000; to manufacture transmissions; directors, E. D. Matteson, G. A. Cotton, G. R. Volkmar.

Chicago—Madia Auto Livery Co.; capital stock, $2,500; incorporators, S. J. Andalman, J. N. Landes, H. Stretton.

Cincinnati, O.—Bond Hill Auto Service Co.; capital stock, $20,000; to operate freight and passenger service; incorporators, J. Glos, J. F. Ahlers, J. B. Arlinghaus, A. H. Pohlman, W. A. Earls.

Cleveland, O.—Automobile Electric Appliance Co.; capital stock, $20,000; incorporators, P. S. Crampton, C. R. Bron, Jr., G. W. House, F. B. Fults, H. Davis.

Cleveland, O.—Auto Electric Appliance Co.; capital stock, $20,000; to manufacture electric appliances; incorporators, P. T. Crampton, C. R. Brown, G. W. House, F. B. Fults, H. Davis.

Cleveland, O.—Northern Ohio Automobile Co.; capital stock, $10,000; to conduct races; incorporators, R. H. Lee, F. Cawood, J. A. Alburn, H. E. Weffler, F. Hockley.

Detroit, Mich.—Motor Patents Co.; capital stock, $10,000; incorporators, J. W. Kyar, S. L. Depew, E. W. McGookin.

Detroit, Mich.—Traveler Motor Car Co.; capital stock, $15,000; incorporators, W. J. McIntyre, J. P. Lavigne, F. W. Barstow, W. L. Kenfield, W. W. McIntyre.

Fort Worth, Tex.—Napatch Tire Filler Co.; capital stock, $110,000; to manufacture tire filling compound.

Grafton, W. Va.—Grafton Motor Co.; capital stock, $5,000; to repair, deal in and store motor cars; incorporators, H. J. Pracht, H. D. Comerford, J. Howard Reynolds, A. R. Huns, D. C. Peck.

Grand Rapids, Mich.—Hand Corp.; capital stock, $30,000; to manufacture motor cars; incorporators, O. H. L. Wernicke, H. C. Cornelius, G. H. Hand, J. A. Whitworth, L. A. Cornelius, G. G. Whitworth.

Harrisburg, Pa.—Economy Tire & Rubber Co.; capital stock, $5,000; to manufacture and deal in rubber goods; incorporators, E. L. Craft, E. M. Knupp, B. F. Knupp.

Highland Park, N. Y.—Walter Williamson Automobile Co.; capital stock, $10,000; to deal in motor cars; incorporators, W. M. Williamson, W. Whitlesey, V. J. Miller.

Kansas City, Mo.—Swinehart Tire & Rubber Co.; capital stock, $10,000.

Kansas City, Mo.—Transcontinental Tire Co.; capital stock, $10,000; to manufacture tires; incorporators, J. Chappelle, E. L. Thompson, C. H. Alexander.

Kingston, N. Y.—Taxicab Transportation Co.; capital stock, $5,000; incorporators, W. Hilterbrant, E. K. Hilterbrant, E. Hilterbrant.

Lynn, Mass.—V. C. Motor Truck Co.; capital stock, $100,000; directors, John M. Nelson, John P. Stevens, W. T. Langmaid, J. P. Croscup, C. N. Alley, S. D. Ritchie.

Marlington, W. Va.—Marlington Garage; capital stock, $10,000; incorporators, F. T. McVlintic, C. A. Yeager, M. E. Pue, G. R. Goodall, L. S. Shoemaker, G. W. Clark.

Montreal, Canada—Canada Tire Filler Co., Ltd.; capital stock, $150,000.

Nashville, Tenn.—Cumberland Motor Co.; capital stock, $10,000; incorporators, W. D. Caldwell, J. H. Cheek, J. O. Cheek, Jr., D. M. Baver.

New York—Englebert Tyre Co.; capital stock, $100,000; deal in tires; incorporators, S. K. Kellock, C. B. Campbell, E. W. Elverson.

New York—Amazon Rubber Smoking Machine Co.; capital stock, $5,000; incorporators, C. T. Green, E. B. Griffin, E. M. Morrison.

New York—Zilio Sales Co.; capital stock, $5,000; to deal in motor car accessories; incorporators, E. Moyse, F. H. Moyse, I. J. Phelps.

New York—Knickerbocker Havers Co.; capital stock, $50,000; incorporators, E. M. Cravath, B. M. Crosthwait.

New York—Simplex Carbureter Co.; capital stock, $150,000; incorporators, A. L. Kull, Colonel Upton, S. J. Meyer, M. Meyer, J. J. Welch.
Thamm.

New York—Ames Automatic Shock Absorber Co.; capital stock, $25,000; incorporators, L. E. Bomeisler, G. H. Edwards, G. Isaksen.

New York—Commercial Delivery Co.; capital stock, $500; to deal in delivery cars and trucks; incorporators, A. Miller, N. Tarakan, L. Tarakan.

New York—Imperial Auto Renting Co.; capital stock, $1,000; incorporators, A. S. Gusson, D. Abraham, A. Miller.

Rochester, N. Y.—Automobile Safety Fender Co.; capital stock, $100,000; incorporators, W. A. Snyder, Jr., A Dewolf.

Seattle, Wash.—Rambler Motor Car Co.; capital stock, $5,000; incorporators, D. W. McNaughton, N. J. Moorehouse.

Seattle, Wash.—Miller Tire Co.; capital stock, $5,000; incorporators, W. M. Barr, J. S. McBride, G. J. Bonness.

Stillwater, Minn.—Republic Motor Co.; capital stock, $10,000; to manufacture motor cars; incorporators, G. H. Sullivan, L. L. Manwaring, P. H. Guilford.

St. Joseph, Mich.—Wizard Mfg. Co.; capital stock, $10,000; to manufacture carbureters; incorporators, F. A. Sharpneck, T. Robinson, G. C. McDowell.

Toledo, O.—Landman-Griffith Co.; capital stock, $10,000; to deal in and repair motor cars; incorporators, C. P. Landman, C. K. Friedman, W. E. Griffith, H. Landman, G. D. Griffith.